TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUAL WITH AND WITHOUT OPIOID USE DISORDER

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ABBREVIATIONS

DM- MATURE	Defense mechanism- mature
DM-IMMATURE	Defense mechanism-immature
DM-NEUROTIC	Defense mechanism-neurotic
DSQ	Defense Style Questionnaire
ICD-10	International Classification of Diseases -10
MCQ- NCT	Metacognition questionnaire-Need to control thoughts
MCQ-CC	Metacognition questionnaire – cognitive confidence
MCQ-CSC	Metacognition questionnaire- cognitive self-consciousness
MCQ-PBW	Metacognition questionnaire- positive beliefs about worry
MCQ-UD	Metacognition questionnaire-uncontrollability and danger
MDM	Moral Decision Making
MFQ-A	Moral foundation questionnaire-Authority
MFQ-F	Moral foundation questionnaire-fairness
MFQ-H	Moral foundation questionnaire- harm
MFQ-I	Moral foundation questionnaire-Ingroup
MFQ-P	Moral foundation questionnaire-Purity
OUD	Opioid Use Disorder
S-REF	Self-Regulatory Executive Functioning
SUD	Substance Use Disorder

ABSTRACT

Introduction: Substance abuse is a common problem among young adults and it has devastating affects both on the individual and their family. Opioids are a class of drugs that act in the nervous system to produce feelings of pleasure and pain relief. Some opioids are legally prescribed by healthcare providers to manage severe and chronic pain. Opioid use disorder is a chronic lifelong disorder, with serious potential consequences including disability, relapses, and death. Severe psychosocial impairment includes criminal justice involvement, school dropout, unemployment, and co-occurring psychiatric disorders. Metacognition describes the processes involved when a person plan, monitor, evaluate and make changes to their own learning behaviors. Defense mechanisms are constructs that denote a way of functioning of the mind. Moral decision making is the ability to produce a reasonable and defensible answer to an ethical question.

Aim of Study: To evaluate metacognition in patients with a diagnosis of Opioid use disorder. 2) To evaluate type of defense styles used by patients with a diagnosis of Opioid use disorder. 3) To evaluate moral decision making in patients with a diagnosis of Opioid use disorder. 4) To find the relationship among metacognition, defense style and moral decision making in patients with a diagnosis of Opioid use disorder. 5) To compare metacognition, defense style and moral decision making in patients with a diagnosis of Opioid use disorder.

Materials & methods: The study will be conducted on patients(N=50) of Opioid Use Disorder and healthy control group (N=50) admitted in psychiatry ward and visiting De-addiction OPD at DMC&H and psychological evaluation will be done using the Metacognitive Questionnaire (MCQ-30), Defense Style Questionnaire (DSQ-40) and Moral foundation questionnaire (MFQ)

Results: Significant mean difference between study group and control group for metacognition, defense style and moral decision making. Patients with opioid use disorder use metacognition related to cognitive confidence, uncontrollability & danger and need to control thoughts more than individuals who does not has OUD. Patients with OUD also use more of immature defense style as compared to those who does not have OUD. Patients with OUD give less importance to aspects like harm, fairness, authority and purity while making moral decisions as compared to individuals who doesn't has OUD.

Conclusion: we found that cognitive confidence, uncontrollability & danger and need to control thoughts subscales of metacognition questionnaire have significant impact on OUD similarly immature defense style also is an important factor in leading or maintain OUD and moral decision making related to harm, fairness, authority and purity is impacted by OUD.

Keywords: Opioid use disorder (OUD), metacognition, defense styles, moral decision making.

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INTRODUCTION

OPIOID USE DISORDER

Opioids are natural or synthetic (made in laboratories to mimic the properties of natural opioids) chemicals that interact with opioid receptors on the nerve cells in the body and brain and reduce feelings of pain. They are a class of drugs that include prescription pain relievers, synthetic opioids and heroin. Prescription opioids are meant to be used to treat acute pain (such as recovering from injury or post-surgery), chronic pain, active-phase cancer treatment, palliative care and end-of-life care. Many people rely on prescription opioids to help manage their conditions under the care of a physician. Opioids reduce the perception of pain, but can also cause drowsiness, mental confusion, euphoria, nausea and constipation. At high doses they can depress respiration. Opioids produce high levels of positive reinforcement, increasing the odds that people will continue using them despite negative resulting consequences. Opioid use disorder is a chronic lifelong disorder, with serious potential consequences including disability, relapses, and death. Severe psychosocial impairment includes criminal justice involvement, school dropout, unemployment, and co-occurring psychiatric disorders. Medical morbidity includes the well-known squeal of injection drug use including HCV, HIV, injection site infections, and others. Worst of all is the catastrophic mortality associated with overdose, and nearly every community in the country has now unfortunately experienced this tragic loss of life in a young person with an opioid use disorder (OUD).[1]

A survey was conducted in India, an output from the project National Survey on Extent and Pattern of Substance Use in India which was commissioned and funded by Ministry of Social Justice and Empowerment, Government of India. The survey also looked specifically for the prevalence of current use and dependence on three different sub-categories of substances in the overall category of opioids:

(1) Opium (including doda/phukki/poppy husk); (2) Heroin (including brown sugar/smack) and (3) Pharmaceutical opioids (which itself includes a variety of medications of the opioid group).

Overall in the country, the prevalence of current use of any opioid was 2.06%. Heroin the most commonly used opioid in India (1.14%). This was followed by pharmaceutical opioids (0.96%) and opium (0.52%). Among opioid drugs, Heroin has highest prevalence of current use as well as harmful use / dependent use. While current use of pharmaceutical opioids follows closely behind, the problem use of pharmaceutical opioids is relatively less. Opium is the least commonly used opioid sub-category and also has the lowest proportion of harmful / dependent users. These findings highlight the differences in addictive property of different opioids. Harmful or dependent pattern observed in half of all heroin users as compared to one fifth of opium users. Of the total estimated approximately 77 lakh problem opioid users (i.e. those using in harmful or dependent pattern) in the country, more than half are contributed by just a few states. Uttar Pradesh, Punjab, Haryana, Delhi, Maharashtra, Rajasthan, Andhra Pradesh and Gujarat are the states which house the highest number of people with opioid use problems. Number of people who need help for opioid related problems in Punjab is around 7.2 lakhs.

The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition describes opioid use disorder as a problematic pattern of opioid use leading to problems or distress, with at least two of the following occurring within a 12-month period:

a) Taking larger amounts or taking drugs over a longer period than intended.
b) Persistent desire or unsuccessful efforts to cut down or control opioid use.
c) Spending a great deal of time obtaining or using the opioid or recovering from its effects.

d) Craving, or a strong desire or urge to use opioids
e) Problems fulfilling obligations at work, school or home.
f) Continued opioid use despite having recurring social or interpersonal problems.
g) Giving up or reducing activities because of opioid use.
h) Using opioids in physically hazardous situations.
i) Continued opioid use despite ongoing physical or psychological problem likely to have been caused or worsened by opioids.
j) Tolerance (i.e., need for increased amounts or diminished effect with continued use of the same amount)
k) Experiencing withdrawal (opioid withdrawal syndrome) or taking opioids (or a closely related substance) to relieve or avoid withdrawal symptoms.

While opioid use disorder is similar to other substance use disorders in many respects, it has several unique features. Opioids can lead to physical dependence within a short time, as little as 4-8 weeks.[1] In chronic users, the abruptly stopping use of opioids leads to severe symptoms, including generalized pain, chills, cramps, diarrhea, dilated pupils, restlessness, anxiety, nausea, vomiting, insomnia, and very intense cravings. Because these symptoms are severe it creates significant motivation to continue using opioids to prevent withdrawal. As with other addictions, both genetic factors and environmental factors, such as ease of access, contribute to the risk of opioid use disorder. Access to prescription opioids and to heroin has contributed to the current opioid epidemic. According to the American Medical Association (AMA), an estimated 3 to 19 percent of people who take prescription pain medications develop an addiction to them. People misusing opioids may try to switch from prescription pain killers to heroin when it is more easily available. About 45 percent of people who use heroin started with an addiction to prescription opioids, according to the AMA.

I. Etiological Factors

- Though our understanding remains limited, we do have increasing knowledge of the multiple factors involved in the etiology of opioid use disorders as a particular class of substance use disorders (SUD). OUDs share many features in common with addiction as a general process and with other SUDs, but there are a number of features that are specific to OUDs that may interact to influence vulnerability, progression and course. These factors range over several domains, including pharmacology, genetics, environmental influences, developmental influences, and comorbidities.
- Opioids are all enormously reinforcing, one feature of their specific pharmacological properties. Positive reinforcement is largely mediated by the indirect downstream activation of dopamine receptors, one of the main final common pathways of reward. Though opioids produce somewhat less immediate dopamine release than stimulants, they rank very high in the hierarchy of rewarding substances and produce higher levels of positive reinforcement in animal and human self-administration models than almost all substances other than stimulants, as a feature of the intrinsic properties of the opioid receptor. Also very prominent and perhaps even more clinically significant in chronic OUDs is the typical negative reinforcement produced by opioid withdrawal once physiological dependence has occurred. Although the onset of withdrawal following opioid discontinuation varies with the half-life of the particular opioid, it produces a characteristic physiological syndrome with even brief abstinence or even delay of dosing. Steady exposure to opioids can produce this process of neuro-adaptation leading to physiological dependence and withdrawal within as little as 4-8 weeks in opioid-naïve individuals, and much faster with reinstatement after relapse in those with prior dependence. Opioid withdrawal includes activation of the locus ceruleus region of the

brain with increased systemic sympathetic tone, leading to its characteristic features (including chills, diarrhea, nausea, cramps, anxiety, etc; see below), accompanied by very high intensity cravings.

- Approximately 40-60% of the vulnerability to any addiction is attributable to genetic factors. Broad population twin studies generally suggest that genetic factors have the strongest influence as a common vulnerability to SUDs in general rather than to phenotypic expression of vulnerability to or preference for any specific individual substance. On the other hand, with more advanced genetic techniques, several specific loci have been associated specifically with opioid use and OUD, with moderate opioid-specific heritable vulnerability. Specific allelic variants have been identified that seem to confer risk, in various genes including those coding for dopamine receptors and the dopamine transporter, opioid receptors, opioid neuropeptides, serotonin receptors and the serotonin transporter, and cannabinoid receptors. For example, polymorphisms in the gene for the mu-opioid receptor (OPRM1) have been variably linked to differences in binding affinity and signaling efficiency, increased basal cortisol levels and opioid-mediated dynamic cortisol response, differential analgesic effects of morphine; and some studies have found associations between these allelic variations and rates of opioid dependence, though others have not.
- As with genetic factors, environmental factors have strong influence as common factors increasing vulnerability broadly to SUDs. Typical risk factors such as stress, adversity, exposure to substance use in family and peers, etc. tend to increase risk for all substances rather than to opioid use or preference specifically. But, in addition, there are certainly unique environmental influences that differentially increase the risk of OUDs specifically. Such influences include:

exposure to opioids as a specific class of substance, most importantly non-medical use; exposure to medical opioid analgesics; use of opioids by family, peers and other influential role models; permissive attitudes toward opioid use by influential role models; and access to opioids as a specific substance class.

- Access is a particularly important environmental risk factor. The issue of ease of access, both for prescription opioids and for heroin, has been important in the genesis of the current epidemic. With increasing trends in medical prescribing of opioid analgesics over the past two decades, the overall US supply of prescription opioids has expanded greatly, with non-medical diversion an unintended (but perhaps predictable) consequence. From 1999 to 2010 the per capita kilogram sales of prescribed opioid analgesics quadrupled. This trend parallels the concurrent curves of increasing per capita opioid treatment admissions and per capita opioid overdose deaths .And while large increases in prescribing of opioid analgesics have mostly been a phenomenon of adult medical practice, the trend has emerged to a lesser extent in pediatric practice as well Heroin access has been promoted by increasingly plentiful and cheaper supplies. As with all substances, youth are particularly price sensitive in their substance use behaviors, often more so than adults.
- While prescription opioid use has a 10-fold greater prevalence than heroin among youth, it also fuels heroin use as a gateway of entry. Although the cost of prescription opioids on the street remains very high the cost of heroin has declined and its purity has increased dramatically in recent years .This makes heroin a more economical alternative to prescription opioids, based both on price and potency (“cheaper and better”), once opioid addiction has become established.
- Increasing purity has also promoted heroin use among youth in another way. Four decades ago, the low purity of available heroin

meant that injection use was required to produce meaningful intoxication, and the need for injection has always been a major barrier to initiation of heroin use for youth. But over the past 2-3 decades as heroin purity in street supplies has increased, often exceeding 60% purity, nasal use or smoking is now a very efficient route of administration, and a young person can initiate and become addicted to heroin without injection use. Once heroin addiction is established, presumably, the hurdle to injection is less of a barrier.

- More recently, efforts to limit the supply of prescription opioids have started to succeed, through various means, including medical education about opioid analgesic prescribing, law enforcement interdiction of “pill mills”, use of prescription drug monitoring plans, and others. But as the availability of prescription opioids decreases and the street price of pills goes up, there is concern that there may be a corresponding shift toward heroin use. It is hoped that the trend toward less prescription opioid availability will help bring down both initial use of opioids and therefore overall rates of opioid use disorder, but it is also possible that more adolescents may start using heroin earlier after having initiated opioids through prescription opioids, or even using heroin as their first opioid.
- Developmental vulnerabilities and comorbid psychiatric disorders are additional factors that confer considerable risk for all SUDs. Examples include problems with affective regulation, depression, anxiety, excitement-seeking, extreme extroversion, impulsivity, cognitive impairment, and problems with executive control. As far as we know, like the common environmental and genetic vulnerability factors shared by all SUDs, these tend mostly to increase risk for all substances rather than for opioid use or preference specifically. Both co-occurring psychiatric disorders and deviation from normal developmental trajectory seem to worsen with increasing severity and chronicity of overall SUD, and vice versa, with reciprocal

worsening of course. For some, if unchecked, this progression may lead to opioid addiction. In this context OUDs may be seen as a more advanced stage of a general progression of SUD along a continuum. Some have hypothesized that there may be an inexact dose response relationship for some of these shared factors, making OUDs more likely with increased cumulative risk burden as a higher severity form of the more general disorder.

II.Epidemiology

The non-medical use of opioids in the general population is a growing public health and social concern across the entire lifespan .In the US, the number of people age 12 and older using prescription opioids more than doubled between 1975 and 2008 from 3.5% to over 9% while the prevalence of marijuana and alcohol abuse decreased or plateaued .In 2009, 2.2 million Americans aged 12 years or older used prescription opioids as their first illicit drug, second only to marijuana. In 2013 there were 169,000 persons aged 12 or older who used heroin for the first time.

METACOGNITION

Metacognition describes the processes involved when a person plan, monitors, evaluate and make changes to their own learning behaviors. The simplest definition of met cognition is cognition about cognition. A met cognitive process is meta-level with respect to an object-level cognitive process. This framework was originated by Flavell[2] and later Nelson and Narens,[3] in the study of learning and memory. However, most of the time met cognition happens largely automatically and involuntarily, so that we remain largely unaware of its presence.

The obvious benefit of being able to reflect upon one's own thinking is that it allows us to take control over our cognitive activity. Most researchers therefore agree that met cognition has at least two functions. One function is to monitor the current state of whatever cognitive activity we are engaged in (Dunlosky & Metcalfe, 2009).[4] The other function is to control

our own cognition—to try harder or less hard to remember something, or to shift to a different strategy when we are stuck in attempting to solve a puzzle.[5]

This is why some researchers have tried to identify distinguishable sub-components of metacognition. A classic distinction (Efklides, 2008, 2011; Flavell, 1979) is between three facets of metacognition: knowledge, strategies, and experiences.[6] Metacognitive knowledge (Flavell, 1979) [2] is the person's knowledge and understanding of their own and other people's cognitive abilities and strategies Metacognitive strategies refer to the way in which we deliberately engage in various activities to control cognition (Efklides, 2008).[7] Metacognitive experiences are feelings and judgments that occur during a cognitive activity and reflect aspects of this activity. Flavell also introduced a fourth facet, namely, metacognitive goals [or tasks]. This refers to the objective of the cognitive activity in question. However, this facet has received less attention than the three others. Importantly, Flavell (1979) emphasized the importance of possible interactions between the three facets.[2]

The concept of metacognition has been used to explore a variety of phenomena, It has also been used to understand the development and treatment of various forms of psychopathology.

Metacognition as the act of "thinking about thinking" is as old as the human ability to reflect on their own cognitive experiences—what Socrates summarized as "I know what I do not know" (Plato, Apology). Ever since the advent of psychology as an independent science at the end of the 19th century, aspects of metacognition have been an integral part of it under many different names, including "vigorous thinking" (Gray, 1925)[8] In memory research, for example, the feeling-of-knowing (FOK) experience (Hart &Kuhlen, 1965)[9] and tip-of-the-tongue (TOT) state (R. Brown & McNeill, 1966)[10] were studied before the term metacognition was established. Metacognition became a hot topic, especially in cognitive

and developmental psychology, after Flavell outlined a framework to distinguish between the three aspects of metacognition introduced above (Flavell, 1979; Flavell & Wellman, 1977). A. L. Brown (1977)[11] applied and extended metacognition as being more than an epiphenomenon to educational psychology. Her studies on reading comprehension in typically developing as well as children with varying degrees of intellectual ability and challenge fall into developmental, educational, social, and clinical psychology. Whereas the focus in the 1970s was largely on metacognitive knowledge and experience, the focus shifted in the late 1970s and 1980s to a stronger emphasis on metacognitive control and strategy use (Dimmitt & McCormick, 2012)[12] Since then, metacognition continued to be a topic of interest in cognitive psychology, especially in metamemory research. In clinical psychology, the importance of self-monitoring skills can be traced back at least to Ellis (1962),[13] when therapists were encouraged to instruct the patient to monitor their cognition, and has since been more formalized by Meyers, Mercatoris, and Artz (1976).[14] In comparative psychology, an early study of metacognition in non-human animals was conducted by Smith et al. (1995)(15). This was a perceptual discrimination task with dolphins but which raised some controversy over the extent to which this really was a case of metacognition. Around the same time, metacognition became a topic of study in cognitive neuroscience and clinical neurophysiology. It should also be noted that a number of early studies of learning addressed phenomena that are arguably metacognitive in nature, even though they were not explicitly categorized as such. Examples include Harlow's "learning sets" (Harlow, 1949),[16] learned helplessness (Seligman & Maier, 1967),[17] and causal inferences in pigeons (Killeen, 1978).[18] Some decades later, Reder (1996)[19] reviewed papers on metacognition from multiple research fields, including developmental psychology, neuropsychology, and educational psychology. She pointed to the fact that the different fields treated metacognition as a concept involving some

degree of awareness of mentalactivity, but that the discrepancies between the various conceptualizations were of such magnitude that it was difficult to conclude that metacognition could be seen as a unitary concept.

CLINICAL PSYCHOLOGY AND METACOGNITION

Metacognition, in clinical psychology, is conceptualized as skills that guide information processing and judgments about the thoughts and actions of oneself and others (Dimaggio & Lysaker, 2015).[20]

Researchers in clinical psychology explore the influence of metacognition on mental states, and central questions circle around metacognition as a working factor in the development or treatment of psychopathology. For example, (a) if a metacognitive deficit is associated with psychopathology, how can therapists work with patients' metacognition to improve psychological functioning and mental health? Or (b) Does an assumed metacognitive deficit reflect the same construct in all psychopathology or does it differ from condition to condition? Metacognition in the field of clinical psychology has been dominated by the work of Adrian Wells and colleagues since the 1990s (Wells, 2009; Wells & Matthews, 1994; Wells & Purdon, 1999).[21-24] The focus has been especially on how individuals understand psychiatric symptoms and diagnoses and how they respond to them (Lysaker et al.,2011).[25] The goal is to tailor therapeutic interventions that help people modify their dysfunctional thoughts and develop responses that are more functional (Matthews, 2015).[26] A key purpose is thus to help patients identify, understand, and repair dysfunctional metacognition. According to the theory of Self-Regulatory Executive Function (S-REF), dysfunctional metacognitive beliefs are important contributors to the development and perseverance of psychopathology (Wells, 2009; Wells & Matthews, 1994).[23] Worrying, rumination, threat-oriented thoughts, and other poor coping strategies are seen to constitute a cognitive attentional syndrome (CAS). This syndrome is supposedly maintained by dysfunctional metacognitions: one example

is when a depressed patient perceives worrying as an effective coping strategy, and therefore continues worrying. Ergo is not only the negative content of thoughts (what one thinks) that makes people develop psychopathology but also dysfunctional beliefs about these thoughts (how one thinks) (Wells, 2009). These dysfunctional beliefs seem to be common processes associated with various psychopathologies (Sun, Zhu, & So, 2017).[27] On the contrary, well-developed metacognitive skills may foster mastery and more functional coping strategies (Semerari et al., 2003).[28] This is related to self-regulation and control—how patients may take action and implement strategies to alter an undesirable mental state and how they may learn to think critically and rationally about the problematic thoughts they experience. Another related concept is cognitive insight, which is the capability to identify false beliefs and change these with the help of external feedback (Beck & Warman, 2004; Moritz et al., 2018).[29-30] Deficits in metacognitive abilities are associated with various psychiatric diagnoses and problems. Already in the 1980s, Baron-Cohen, Leslie, and Frith (1985)[31] found deficits in autistic children's abilities to form theories about an other's mind. Similar patterns have been identified for some symptoms of schizophrenia (Brüne, 2005; Frith & Corcoran, 1996).[32-33] Diagnoses where dysfunctional metacognition seems to play a role include schizophrenia (Lysaker et al., 2011),[25] depression (Halvorsen et al., 2015; Papageorgiou & Wells, 2003),[34,35] OCD (Salkovskis, Richards, & Forrester, 1995) [36], personality disorders (Dimaggio & Lysaker, 2015; Fonagy, 1991; Krueger, 2006),[20,37,38] anxiety disorders (Spada, Nikcevic, Moneta, &Ireson, 2006),[39] anorexia (McDermott & Rushford, 2011),[40] hypochondriasis (Bouman & Meijer, 1999),[41] dependencies (Saed, Yaghubi, & Roshan, 2010; Spada, Nikcevic, Moneta, & Wells, 2007),[39] gambling (Lindberg, Fernie, & Spada, 2011),[42] pathological procrastination (Spada, Hiou, &Nikcevic, 2006),[43] and perceived stress (Roussis & Wells, 2008).[44] As empirical research has shown associations between dysfunctional

metacognition and psychopathology, metacognitive therapy has been proposed as a psychological treatment (Wells, 2001, 2009).[21] Where cognitive therapy challenges the content of the patient's beliefs and thoughts, metacognitive therapy challenges the beliefs about the beliefs (Matthews, 2015).[26] A cognitive therapist will be interested in the thought patterns that a patient has and try to change these into ones that are more constructive. A metacognitive therapist, on the contrary, will be interested in what the thoughts mean to the patient, which thinking strategies the patient uses, and the knowledge base that guides these strategies (Wells, 2001). For instance, a situation may elicit a certain thought in a person, for example, "I am worthless," that makes the person feel depressed. Cognitive therapy will question the validity of the thought and try to alter it into something else, preferably something that yields a more positive consequence. Metacognitive therapy, on the contrary, will first address what the patient thinks and feels about the thought, how the patient deals with it and why, and then aim at altering the strategy to alter the thought. Metacognitive therapy includes attention training, detached mindfulness, and behavioral experiments. It has been successful in treating depression and anxiety disorders (Kahl, Winter, & Schweiger, 2012; Normann, van Emmerik, & Morina, 2014; Sadeghi, Mokhber, Mahmoudi, Asgharipour, &Seyfi, 2015)[45–47] as well as psychosis (Vitzthum, Veckenstedt, & Moritz, 2014).[48]

METACOGNITION AND ADDICTIVE BEHAVIOURS

Spada and Wells (2009) and Spada, Caselli, and Wells (2013) have applied the S-REF model to addictive behaviors. In their formulation the CAS and metacognitive beliefs are conceptualized across three temporal phases of the addictive behavior episode: pre-engagement, engagement, and post engagement. What follows is an exposition of these different phases in nicotine use. In the pre-engagement phase triggers in the form of urges, images, memories or thoughts activate the S-REF and associated metacognitive beliefs to guide appraisal and coping style.

Positive metacognitive beliefs such as “Thinking about having a cigarette will make me feel better” and negative metacognitive beliefs such as “I cannot control my thoughts of smoking” activate the perseverative processing of intrusions and attempts at their suppression (the CAS) leading to an escalation of negative affect and craving. As a consequence the smoker becomes more likely to use in order to regulate these feelings and escape the escalating discrepancy between current and desired states. The activation of the pre-engagement phase requires awareness of a preference. It is important to note that if the addictive behavior becomes habitual then the pre-engagement phase may be bypassed. When habit has been established, the pre-engagement phase can occur in three circumstances: (1) in a relatively new contextual environment; (2) when the habitual addictive behavior is interrupted through external control; or (3) through conscious attempts to remain abstinent. This helps to explain why severely addicted individuals may not report pre-engagement extended thinking (Caselli & Spada, 2011).[49] In the engagement phase positive metacognitive beliefs about engagement (“Smoking will help me control my thoughts/reduce my worrying”) are paralleled by changes in metacognitive monitoring (the ability to monitor internal states as a guide to knowing how close one is to resolving discrepancies and achieving the desired state). These two factors contribute to a reduced ability to regulate behavior. Specifically, reductions in metacognitive monitoring are thought to result from: (1) behaviors that distract from self-awareness and from monitoring the flow of goal-progress information thereby limiting the opportunity to identify a stop signal for engagement; and/or (2) the chemical effects of the addictive behavior (e.g. alcohol/nicotine) which affects higher order functioning and therefore impacts negatively on metacognitive monitoring. Over the course of time and as the addictive behavior escalates in severity, negative metacognitive beliefs about its uncontrollability emerge, contributing to its perseveration. These include negative metacognitive

beliefs about the power of thoughts about the addictive behavior causing uncontrollable engagement (“Thinking about smoking can make me do it”) and negative metacognitive beliefs about the uncontrollability of the addictive behavior once it is initiated (“Once I start smoking I find it difficult to stop”). In the post-engagement phase, an intrusion (e.g. a self-blaming thought or withdrawal symptoms) leads to accessing positive metacognitive beliefs about post-engagement rumination (e.g. “If I analyze why I am feeling this way I will understand why I smoke”) and the activation of the associated coping styles of rumination and thought suppression. The latter leads to a worsening of negative affect increasing the likelihood of returning to engagement as a means of achieving self-regulation.[49]

The triphasic metacognitive formulation of addictive behaviors proposes that aspects of the CAS such as attentional bias, extended thinking (e.g. desire thinking, rumination and worry), disruption in metacognitive monitoring and thought suppression should be associated with addictive behaviors and lead to maladaptive consequences including increased levels of craving and engagement. The formulation also proposes that metacognitive beliefs should be associated with aspects of the CAS and addictive behaviors.[49]

DEFENSE MECHANISM

Defense mechanisms are "constructs that denote a way of functioning of the mind" (Wallerstein, 1985, p. 222), while "defenses are the specific behaviors, affects or ideas, that serve defensive purposes" (Wallerstein, 1985, p. 222).[50] There is general agreement that the purpose of the defenses is to prevent other ego functions from being disrupted or disorganized by excessive negative affect, such as anxiety or guilt. Disturbing emotions and relational difficulties might be mitigated by defense mechanisms. Defenses are cognitive, emotional, and

interpersonal strategies that keep overwhelming emotions from awareness (Coughlin, 2016)

The discovery that the human mind can keep certain painful thoughts and feelings hidden (i.e., unavailable to consciousness) occurred early in Freud's explorations of psychopathology (Freud, 1894).[51] The history of the concept of defense in Freud's writings has been traced by Sjoback (1973)[52] and van der Leeuw (1971),[53] and is briefly summarized here. Until about 1900, Freud considered defense to be a mental function, one of the several faculties of the mind. Within this conception, the defense function could be used by all forms of psychic material; there were no specific defense mechanisms. Thus, any type of psychic material might be used to "screen," or conceal, other material. The purpose of the defense function was related to the painful feelings and affects of patients. It was to avoid the experience of pain that the defense function was called into play. From 1900 until the publication of the Ego and the Id (Freud, 1923a) [54] the concept of defense was important primarily in terms of its relationship to the drives. Freud's focus during this time was on inner psychic reality, and especially the unconscious drives; in his theory, the importance of affect and of external reality had lessened. During this period, the function of the defense was thought of as a counterforce against the push of the drives for discharge. In the psychoanalytic terminology of that time, the defense served as an anticathexis. With the publication of The Ego and the Id, Freud introduced his model of personality as consisting of three structures-id, ego, and superego. This structural model was amplified by Freud in "Inhibitions, Symptoms and Anxiety" (1926), in which the ego was considered an independent, functional organization with its own activities. The concept of defense as a general function was considered again, with defense now conceptualized as an ego function. Furthermore, it was suggested that various defense mechanisms may carry out this ego function, the purpose of which was always to protect the ego against instinctual demands. Within academic

psychology, the 1930s produced a series of empirical studies of defense mechanisms. Most of these laboratory studies focused on either the defense of repression or the defense of projection. The majority of the investigations of repression were of two types: (a) experiments on learning and memory and (b) studies of perceptual defense. Although these studies flourished from the 1930s to the 1960s, they eventually had their critics. Chief among these was D. S. Holmes (1972, 1974, 1990), [55,56] who concluded that the majority of memory results previously attributed to repression were better explained by differences in attentional processes. The perceptual defense studies were also criticized on methodological grounds. The difficulty individuals had in perceiving taboo words might well have been due to factors such as word length, differential stimulus familiarity, and social unacceptability (whereby the perceiver suppresses verbalization; Howes & Solomon, 1950; McGinnies, Comer, & Lacy, 1952).[57,58] The net result of these critiques was the decision that repression, if defined as a defense process that occurs without awareness, does not exist. The critiques by Holmes and others had a decisive impact on the field of academic research, and by the end of the 1970s the laboratory study of repression had virtually disappeared (Holmes & McCaul, 1989; Paulhus, Fridhandler, & Hayes, 1997).[56,59]

Defenses in Personality Psychology:

A recent chapter in the Handbook of Personality, (Paulhus et al., 1997)(59) and a special issue of the Journal of Personality (Cramer & Davidson, 1998)[60] have been devoted to defenses in personality research. The following discussion will be selective, focusing on two areas of personality study that have included a consideration of defense mechanisms. Other programs of research (Conte & Plutchik, 1995; Erdelyi, 1990: Haan, 1977; Horowitz, 1988; Ihilevich & Gleser, 1986; Vaillant, 1992)[61–66] are reviewed by Paulhus et al. (1997)[59] and by Singer (1990).[67] Identity and Identity Status the process of identity development, a major task of

adolescence, is often fraught with anxiety. According to theory, defense mechanisms function to control anxiety. Thus, one might expect the use of defenses to be related to identity development, as has been found. Late adolescents in the noncommitted identity statuses show strong use of defenses, in contrast to those in the committed statuses (Cramer, 1995, 1998b).[68,69] Further, it has been demonstrated that the use of defenses is a linear function of the degree of crisis associated with the identity status (Cramer, 1997b).[70] In the laboratory, several studies have demonstrated that experimental threat to an individual's identity results in heightened use of defense mechanisms. This increased defense use is greater when the threatened characteristic is more central to the person's self-representation (Cramer, 1991 a, 1998c; Grzegolowska-Klarkowska & Zolnierczyk, 1988, 1990).[71-73] Gender Role Conflict and Sexual Identity Earlier studies found sex differences in the use of defense mechanisms. Perhaps more interesting were findings showing that men and women with a strong feminine gender identity were more likely to use typically female defenses (e.g., turning against the self), whereas those with a strong masculine identity were more likely to use male defenses (e.g., turning against the object; Cramer, 1991b). Recent work has demonstrated that gender role conflict is related to increased defense use (e.g., Mahalik, Courlloyer, DeFranc, Cherry, & Napolitano, 1998). Specifically, men with a feminine personality organization and women with a masculine personality organization were found to show greater defense use than those with a gender consistent personality organization (Cramer, 1999b; Cramet & Blatt, 1993). Further, threat to gender identity intensifies the use of defenses: college students given (bogus) cross-sex-role feedback significantly increased their defense use (Cramer, 1998c). Similarly, two studies of gay men found an increase in defense use when they were required to tell stories to pictures involving heterosexual activity, a situation inconsistent with their sexual identity (Luciano, 1999; Luciano & Brice, 1999).

DEFENSE MECHANISMS IN CLINICAL PSYCHOLOGY

Regardless of theoretical orientation, the increasing body of evidence for psychological functioning outside of awareness and for defenses has important implications for anyone involved in the treatment of patients, either medical or psychiatric. Therapeutic Noncompliance Studies of patients with serious medical conditions, such as cancer, diabetes, kidney failure, or obesity, find that those who do not comply with medical advice also show strong use of defense mechanisms (Farberow, 1980; Goldstein, 1980; Katz, Weiner, Gallagher, & Hellman, 1970; Oettingen, 1996). Although defenses protect these patients from anxiety about being ill, they also keep them from recognizing the importance of obtaining the needed treatment. Psychologists may differ on this point (cf. Colvin & Block, 1994; Taylor & Brown, 1994), but there appears to be no disagreement that strong positive illusions, in which the implications of adversity are denied, are not, in the long run, adaptive (Suls & Fletcher, 1985). Thus, in working with patients for whom continuing compliance with a therapeutic regimen is necessary, it is highly beneficial to know something about the patient's defenses, especially those that may interfere with treatment (Fulde, Junge, & Ahrens, 1995). This allows psychologists to alert the treating clinician, when indicated, that the patient's customary way of dealing with stress may interfere with their following treatment advice. Further, premature termination or avoidance of therapy may be significantly influenced by defense mechanisms related to attachment style. Research with college students shows that those with a dismissing attachment style use defensive operations to exclude or significantly distort attachment-related information when they are interviewed (Dozier & Kobak, 1992). In addition to downplaying the importance of relationships, these individuals report extremely positive relationships with their parents and minimize the importance of childhood experiences. As Dozier and Kobak (1992) have pointed out, such individuals are likely to show considerable resistance to insight-oriented

psychotherapy. For the clinician, it is important not only to recognize that this self-report may be defensive but also to understand what it is defending--namely, that through these distortions the patient has found a way to maintain an attachment to his or her parents--and that this is a source of resistance to therapy. Thus, the decision of how or whether to address defense mechanisms in therapy should take into consideration whether the defense is adaptive or not. "By thoughtlessly challenging irritating, but partly adaptive, immature defenses, a clinician can evoke enormous anxiety and depression in a patient and rupture the [therapeutic] alliance" (Vaillant, 1994, p. 49).

Beginning with the Diagnostic and Statistical Manual of Mental Disorders, third edition (American Psychiatric Association, 1980), defense mechanisms were to be included as one of the several diagnostic axes, but this plan was abandoned "because defense mechanism implied unconscious etiology" (Vaillant, 1984, p. 544). A glossary of defense mechanisms was included in the Diagnostic and Statistical Manual of Mental Disorders, third edition, revised (American Psychiatric Association, 1987); in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV; American Psychiatric Association 1994), a "Defense Functioning Scale" is presented for use as an optional axis of diagnosis (see Table 2). Progress with the use of the DSM-IV defense scale in clinical trials has been reported by Perry and Hoglend (1998), showing, for example, that defense ratings constitute a factor, or axis, that is independent from DSM-IV Axes I, II, and V (see also Perry et al., 1998; Skodol & Perry, 1993; Soldz & Vaillant, 1998).

Defenses and Symptoms: It is useful to think of defenses as ordered on a continuum, differing in degree of maturity. In adulthood, defenses may be hierarchically arranged, with the most adaptive ranked at the top of the hierarchy, and the less adaptive, most immature defenses at the bottom (see Table 2). In childhood, the defenses are arranged on a

developmental continuum, with immature defenses appearing before those that are more mature. When defenses are independently assessed from narrative material, the use of immature defenses is found to be related to high symptom scores on the Global Severity Index (GSI; Hibbard & Porcerelli, 1998; Perry & Hoglend, 1998). Further, these independently rated measures of defense are demonstrated by factor analysis to constitute a dimension independent from symptom report (Perry & Hoglend, 1998), a justification for including defenses as an additional DSM axis. Further, defense scores based on clinicians' ratings have been found to predict adequacy of interpersonal and global functioning, with immature defenses being a negative indicator (Cramer, Blatt, & Ford, 1988; Perry & Cooper, 1992; Vaillant & Vaillant, 1992). However, research on the relation between self-report defense measures (e.g., the DSQ) and psychiatric symptoms is less consistent. Further, responses to the DSQ and the GSI have been shown, through factor analysis, to be non-independent, constituting two ends of a single factor (Perry & Hoglend, 1998). What do these studies tell psychologists? One clear conclusion is that persons with clinically assessed psychiatric symptoms are likely to use immature defenses, such as denial. If these individuals are then asked to self-report on their functioning, they should be expected to make use of these defenses, and their self-reports will likely be distorted in accordance with their preferred defense. The fact that clinicians and researchers continue to use these self-report measures, without accounting for the contribution of defenses to the scores obtained, is questionable in the light of overwhelming evidence demonstrating distorted self-reports. Facilitating Differential Diagnosis Research has consistently demonstrated that the use of immature defenses is associated with borderline personality disorder (BPD), that immature defenses differentiate between the presence of a personality disorder and no disorder, and that patients with psychoses use defenses that are less mature than those used by patients with personality disorders (Bond,

Paris, & Zweig-Frank, 1994; Cooper, Perry, & Arnow, 1988; Cramer, 1999b; Devens & Erickson, 1998; Hibbard et al., 1994; Hibbard & Porcerelli, 1998). The relation of specific personality and affective disorders to specific defenses has been demonstrated by Bloch. Shear, Markowitz, Leon, and Perry (1993); Cramer (1999c); Jacobson et al. (1986); Perry (1988); Perry and Cooper (1989); Spinhoven and Kooiman (1997); and Vaillant (1994). Demonstrating the Benefits of Psychotherapy or Other Interventions Clinicians often cite a change in symptoms as justification for the efficacy of treatment, but it is also important to be able to explain why that symptom change occurred. If clinicians want to conclude that psychotherapy is responsible, they should be able to point to some psychological change that is responsible for or at least associated with the symptom change. Being able to demonstrate change in defense mechanism use provides this kind of information. The relation between therapeutic benefits and defense use has been demonstrated in several clinical studies. For example, after 15 months of intensive therapy, hospitalized patients showed a significant decrease in immature defense use, and this decrease was correlated with a similar decrease in independently rated psychiatric symptoms (Cramer & Blatt, 1993). Further, among these patients, those rated as most improved showed the greatest decrease in the use of immature defenses (Cramer, 1999b). Change in defense use has also been found to be associated with remission from depressive episodes and a decreased number of obsessive-compulsive symptoms (Akkerman, Carr, & Lewin, 1992; Albucher, Abelson, & Nesse, 1998). Hoglend and Perry (1998) found that an initial clinical assessment of defenses predicted treatment outcome with depressed patients better than did an initial assessment of DSM-IV Axis V global functioning. Significantly, neither a self-report defense measure (DSQ) nor self-reported symptoms (GSI) were effective predictors of outcome. Given these findings showing the importance of defense mechanisms for understanding clinical phenomena, the

implications seem clear: A systematic assessment of defense mechanisms "is central to a comprehensive personality assessment" (Millon, 1984, p. 460). "Today, no mental status or clinical formulation should be considered complete without an effort to identify the patient's dominant defense mechanism" (Vaillant, 1992, p. 3).

DEFENSE STYLE AND SUBSTANCE USE DISORDER

Defenses mitigate anxiety but simultaneously exclude adaptive emotion regulation and thereby hinder symptom reduction. Defenses might be classified as primitive or mature (Kernberg, 1992; Perry & Bond, 2012)[74,75].Primitive defenses tend to occur in individuals with SUD, and the patients' defenses need to be assessed so that treatment can be planned according to the needs and capacities of each patient (Aleman, 2007b; Beveridge, 2008; Director, 2002; Evren et al., 2012).[76-79]

substance dependent individuals use defense styles such as rationalization, projection, denial and suppression defenses more than healthy individuals (Miller, 1985; Ward and Rothaus, 1991).[80,81] In a recent study conducted in Turkey, sublimation, pseudoaltruism, acting-out, isolation and autistic fantasy discriminated substance dependents from healthy controls (Taskent et al., 2011).[82] In this study, using immature defenses were related with severity of dependency, dissociative experiences and childhood trauma experiences (Taskent et al., 2011).[82] Again in a recent study, Turkish alcohol dependent inpatients were using maladaptive immature defense styles more, and immature defense style was related with alexithymia (particularly difficulty of identifying feelings), low cooperativeness and high self-transcendence (Evren et al., 2012).[79] These may suggest that these groups of patients with immature defenses are psychologically more problematic subgroups. Drinking may become a predominant ''avoidant'' way of coping for individuals who are unable to achieve satisfactory or acceptable outcomes to stressful situations (Marlatt et al., 1988).[83] In this regard, the use of coping styles has been

found to be associated with greater levels of alcohol consumption (Moussas et al., 2006),[84] adverse consequences (McCreary and Sadava, 1998)[85] and relapse (Waisberg, 1990).[86]

MORAL DECISION MAKING

Judgments and decisions of any sort – including those that involve matters of morality – are not a matter of magic but result from processing of information" (Fiedler &Glöckner, 2015, p. 139). Moral decision-making, similarly to other types of decision-making, is a complex process. When deciding how to act in a situation within the moral domain an individual must firstly recognize the situation as having moral rules attached, retrieve relevant moral schemas from memory, encode and interpret relevant features of the situation and generate and evaluate possible moral response options. As many processes are involved when making moral decisions, particularly moral response decisions, it follows that in order for moral decision-making to mature, many processes, and relationships between processes, are required to develop. For example, to encode the relevant features of a moral situation, attention must be allocated to these features. Increases in attentional abilities will lead to more features of a situation being encoded, and therefore enhance the capacity for making more mature moral decisions. However, many other processes are also involved in moral decision making and each is necessary but not sufficient for mature moral decision-making. Moral development is the maturation of moral decision-making, including the development of moral reasoning and related processes that increase the capacity for making mature moral decisions. Moral reasoning differs from other forms of reasoning because it is guided by morally relevant rules, knowledge and understanding, stored in memory as moral schemas. Moral reasoning is one process that can guide moral decisions, but other processes and factors are also involved, and the extent of their involvement can differ depending on the type of decision being made.

The moral domain covers the fairly universal principles of harm, justice, fairness and care, though how these principles are set out as rules or laws can differ between societies, cultures and religions, and may change over time. It does not necessarily follow that mature moral decisions based on a deep understanding and appreciation of moral principles will lead to behaviour that conforms to a law of society. For example, an individual with a mature understanding of the moral principle of fairness may feel they cannot obey laws that violate the human rights of a certain group. Furthermore, whether a moral response decision leads to enactment of a chosen behaviour may depend on other contextual and situational factors. Behaviour which conforms to or follows moral principles (though not necessarily laws) of society can be referred to as moral or prosocial behaviour, and behaviour which violates the moral principles of society can be referred to as immoral or antisocial behaviour. Moral decision-making and how it develops will be the focus of this paper, rather than moral behaviour, but we do offer some suggestions for how future research could enhance our understanding of the relationship between moral decisions and behaviour.

In recent years there has been an increased interest in moral decision-making amongst social neuroscientists (Beauchamp, Dooley, & Anderson, 2013; Dooley, Beauchamp, & Anderson, 2010; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Mendez, Anderson, & Shapira, 2005). The most prominent moral theory in social neuroscience is the dual-process theory, which makes inferences about the cognitive and affective processes involved in moral decision-making based on the extent to which different brain regions are activated when making such decisions (Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008; Greene, Nystrom, Engell, Darley, & Cohen, 2004; Greene et al., 2001). Some social neuroscience perspectives are more developmental in focus, suggesting how brain development facilitates moral development through its effect on the emergence of relevant cognitive and affective processes, but such

theories do not always reference the rich tradition of developmental psychology theory in this area (Baird, 2008; Kagan, 2008). Taken together, moral theories from developmental psychology and social neuroscience have the potential to provide a fuller picture of moral decision-making and moral development.

Moral Foundations Theory is a descriptive theory about the diverse contents of moral psychology, particularly moral judgment. It contends that human moral judgment (a) is primarily an intuitive, non-rational process, and (b) can be broken down into discrete categories of moral intuition that each process different types of moral stimuli and that function to sustain features of human sociality. Extant theory posits five core domains of moral intuition, geared toward the processing of information pertaining to: (i) harm vs. care; (ii) fairness vs. cheating; (iii) loyalty vs. betrayal; (iv) authority/respect vs. subversion; and (v) purity/sanctity vs. degradation.

MFT is largely an offshoot of Haidt's (2001) Social Intuitionist Model (SIM) of moral judgment, which theorizes that moral judgments emerge primarily from emotional and intuitive processing of moral stimuli, with reasoning and deliberation typically arising only after such processing has taken place. Building on the SIM, MFT is an attempt to detail the specific types of evolved and morally laden intuition which process moral stimuli.

Earlier theories of moral psychology (e.g., Turiel, 1983), in their portrayal of human moral judgment and decision-making, depicted one- or two-content model of morality, drawing upon the values predominant in Western, industrialized cultures: namely, justice/fairness and care/compassion. But as more research looked beyond the particularities of such cultures, it became more evident that human culture and psychology allow for moral systems with little to no direct relevance to harm, welfare, justice, or fairness. For example, Haidt, Koller, and Dias (1993) and Shweder, Much, Mahapatra, and Park (1997) investigated

moral judgments in rural cultures of Brazil and India, respectively, finding harsher judgments of harmless acts (e.g., eating one's dead dog) among participants from these cultures than among participants from urban American settings. For example, consensual incest can be judged as morally wrong even if precautions are taken to avoid all physical or emotional harm and injustice (Haidt et al., 1993), suggesting that concerns irrelevant to harm and injustice are driving the typically harsh judgments of this act. Shweder et al. (1997), through an anthropological lens, thus proposed a pluralistic model of morality, theorizing multiple, discrete types of morality that cannot be reduced to a single principle such as "do no harm". They described three different ways in which cultures consider human beings as moral, which they called the ethics of Autonomy, Community, and Divinity. Autonomy encompasses the values central to earlier research on moral cognition (e.g., Turiel, 1983), depicting the moral being as an individual and thus entitled to justice, rights, personal choice, and safety from harm. Community, on the other hand, comprises values that regulate and protect groups or collectives, such as duty, hierarchy, and unity. The self is conceived as a member of a larger, interdependent collective that holds a history and standing of its own; individuals must therefore show selfless subservience to the goals of the broader collective and defer to ingroup authority. Finally, Divinity has a purported role of protecting the soul and spirit from degradation. The self is conceived as "a spiritual entity connected to some sacred or natural order, and as a responsible bearer of a legacy that is elevated and divine" (Shweder et al., p.138). Building off such cross-cultural research as well as advances in research on intuitive processing and moral emotion (Haidt, 2001), MFT emerged within social psychology initially as an attempt to expand upon Shweder's work and to explain the psychological factors in moral disagreement, political values, and cross-cultural variability in moral judgment. The moral foundations of (1) Care/harm and (2) Fairness/cheating derive from Shweder et al.'s (1997) ethic of Autonomy.

Known as individualizing foundations, they are primarily attuned to individuals as subjects of (rather than as agents of) moral action, and are activated during perception of individuals' plight, suffering, needs, rights, and welfare. Care/harm is geared toward concerns of compassion, empathy, sympathy, nurturance, and harm reduction, and is triggered when one perceives violence, aggression, emotional abuse, bullying, or suffering in general. Fairness/cheating is oriented toward concerns of justice, fairness, proportionality, equality, and reciprocity. It is activated when one perceives injustice, disproportionate distributions (of goods, merits, favors, punishments, etc.), inequality deemed excessive, and failures to reciprocate. The next three foundations are called binding foundations, as they function to enhance social and interpersonal cohesion and to protect the collective. In this sense, they are primarily attuned to individuals as agents of (rather than subjects of) moral acts, who are capable of either supporting or undermining the ingroup in terms of its integrity, intergroup standing, traditions, order, and sanctity. The moral foundations of (3) Loyalty/betrayal and (4) Authority/subversion derive from Shweder et al.'s ethic of Community. Loyalty/betrayal is geared toward concerns of unity, solidarity, community, culture and shared identity, family and tribe, and group loyalty. Evolved in large part for the sake of intergroup competition, this foundation entails a moral duty to support and favor the ingroup, and is triggered when one perceives disloyalty, betrayal, excess individualism, or threats to ingroup identity and cohesion (e.g., as some might perceive immigration). Authority/subversion orients toward concerns for order, hierarchy, authority, tradition, and respect for individuals of higher status, and is activated when one perceives subversion, disrespect, nonconformity, and disobedience. Finally, similar to Shweder et al.'s Divinity, (5) Sanctity/degradation is geared toward protecting the dignity, purity, cleanliness, and sacredness of the ingroup. Acts deemed in violation of the ingroup's essence and spiritual identity (acts typically deemed disgusting) trigger this foundation,

as it functions to protect the ingroup from perceived contamination, including perceptions of physical (e.g., from disease), spiritual (e.g., from curses or witchcraft), and social (e.g., from immigration, tribal intermarriage, premarital sex) contamination. Beyond these five foundations, Graham et al. (2013) proposed that Liberty/oppression, Efficiency/waste, Ownership/theft, and Honesty/deception are good candidates. Nevertheless, these candidate foundations have thus far received little to no empirical attention.

AIMS AND OBJECTIVES

1) To evaluate metacognition in patients with a diagnosis of opioid use disorder.
2) To evaluate type of defense styles used by patients with a diagnosis of opioid use disorder.
3) To evaluate moral decision making in patients with a diagnosis of opioid use disorder.
4) To find the relationship among metacognition, defense style and moral decision making in patients with a diagnosis of opioid use disorder.
5) To compare metacognition, defense style and moral decision making in patients with a diagnosis of opioid use disorder.

REVIEW OF LITERATURE

The following researches have been conducted in past that have focused socio-demographic in opioid use patients, metacognition, defense style and moral decision making.

Socio-demographics In OUD

AGE

A study by Naji et al,.[87] in 2017on the association between age of onset of opioid use and comorbidity among opioid dependent patients receiving methadone maintenance therapy aims to determine the association between age of onset of opioid use and comorbid disorders, both physical and psychiatric, in patients receiving methadone maintenance treatment (MMT) for OUD. This study includes data collected between June 2011 and August 2016 for the Genetics of Opioid Addiction research collaborative between McMaster University and the Canadian Addiction Treatment Centers. All patients were interviewed by trained health professionals using the Mini-International Neuropsychiatric Interview and case report forms. Physical comorbidities were verified using patients' electronic medical records. A multi-variable logistic regression model was constructed to determine the strength of the association between age of onset of opioid use and the presence of physical or psychiatric comorbidity while adjusting for current age, sex, body mass index, methadone dose and smoking status. Results shows. Individuals with an age of onset of opioid use younger than 18 years were found to be at higher odds for having a physical or psychiatric comorbid disorder compared to individuals with an age of onset of opioid use of 31 years or older (odds ratio 2.94, 95% confidence interval 1.20, 7.19, p = 0.02). A significant association was not found between the risk of having a comorbidity and an age of onset of opioid use between 18 and 25 years or

26 and 30 years, compared to an age of onset of opioid use of 31 years or older.

QUALIFICATION

Another study conducted by Martins et al,.[88] in 2014 on Nonmedical prescription drug use among US young adults by educational attainment. Data were drawn from 36,781 young adults (ages 18–22 years) from the 2008–2010 National Survey on Drug Use and Health public use files. The adjusted main effects for current educational attainment, along with its interaction with gender and race/ethnicity, were considered. Results were Compared to those attending college, non-college-attending young adults with at least and less than a HS degree had a higher prevalence of past-year nonmedical use of prescription opioids [NMUPO 13.1 and 13.2 %, respectively, vs. 11.3 %, adjusted odds ratios (aORs) 1.21 (1.11–1.33) and 1.25 (1.12–1.40)].Among users, regardless of drug type, non-college-attending youth were more likely to have past-year disorder secondary to use [e.g., NMUPO 17.4 and 19.1 %, respectively, vs. 11.7 %, aORs 1.55 (1.22–1.98) and 1.75 (1.35–2.28)].[88]

In a study by Schepis et al,.[89] in 2018 on Prescription drug use, misuse and related substance use disorder symptoms vary by educational status and attainment in U.S. adolescents and young adults. Data were from the 2015 National Survey on Drug Use and Health, with 13,585 adolescent and 14,553 young adult respondents. Participants were categorized by educational status separately in adolescents and young adults. Outcomes were rates of past-year prescription drug use, PDM, PDM type, and SUD symptoms, with analyses performed separately by age group and for opioids, stimulants and sedatives/tranquilizers. Analyses used logistic regression and controlled for age, race/ethnicity and sex. Results were that in adolescents and across medication classes, the highest rates of any use, PDM, medical misuse, non-medical misuse and presence of two or more SUD symptoms were seen in those with poor school adjustment

or not in school. In young adults, opioid-PDM and related outcomes were more prevalent in that not in school, especially high school dropouts. For stimulants, rates were highest in full-time college students and college graduates.[89] A study conducted by Ellis et all,. In 2019 on the impact of opioid use disorder on levels of educational attainment: Perceived benefits and consequences with the aim to sought to assess differences in educational attainment between opioid users and the general population, and the impact of opioid use on one's education. Patients (N = 14,349) entering opioid treatment programs across the United States were surveyed on educational attainment from 2010 to 2018. Data were compared to estimates from an annual survey administered by the US Census. A follow-up sub-set of opioid users (N = 240) was interviewed to add context and expand on the structured survey. Results which were : Nearly one-third (32.2%) of the population is estimated to have earned a bachelor's/advanced degree, compared to just 7.8% of treatment-seeking opioid users. Over half of follow-up respondents (57.5%) reported initiating regular opioid use while attending an educational institution. The majority (68.0%) also indicated opioids negatively impacted their education, with drug-seeking behavior prioritized over attendance and academic performance. Hence the study suggest that opioid users achieve lower levels of education, which may result in both individual and economic costs.[90]

OCCUPATION

A study done by Hawkins et al, in 2019 on Opioid-related overdose deaths by industry and occupation. Researchers coded industry and occupation information on death certificates for all OROD among Massachusetts residents from 2011 to 2015. We estimated rates of OROD by industry and occupation using Massachusetts employment data. National survey data were used to explore whether work-related factors known to vary by occupation (occupational injury and illness, job insecurity, and paid sick leave) correlate to observed differences in OROD. The results of the study

were that several industries and occupation groups had rates of OROD that were significantly higher than the rates for other workers. Construction workers and fishing workers stood out for having OROD rates many times higher than the average for all workers. Occupation groups with high rates of occupational injuries and illnesses, high job insecurity, and low availability of paid sick leave had higher rates of OROD.[91]

Another study conducted by choi et al, in 2020 on Opioid use disorder, job strain, and high physical job demands in US workers. Among the participants of the National Survey of Midlife Development in the United States (MIDUS) II Study (2004–2006), 2134 workers (1059 men and 1075 women; mean age, 51 years) were chosen for the study. OUD was measured with self-administered questions in line with the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSD-5). Physical demands (physical efforts, heavy lifting, and crouching/stooping/kneeling) and psychosocial work stressors (skill discretion, decision authority, job control, psychological job demands, supervisor and coworker support at work, job insecurity, and work hours) were measured with a standard questionnaire the results shows the prevalence of OUD was 3.8%. In multivariate analyses, low skill discretion, high psychological job demands, job strain (a combination of low control and high demands), and high physical job demands were significantly associated with OUD. The multivariate prevalence ratios for OUD by job strain and frequent heavy lifting were 1.98 (1.27–3.10) and 2.23 (1.22–4.10), respectively. Job strain was more strongly associated with OUD in men, while high physical job demands were more strongly associated with OUD in women. This study implies that adverse physical and psychosocial working conditions may be important risk factors for OUD in US working populations. Future longitudinal and mechanistic studies are urgently warranted.[92]

SOCIO-ECONOMIC STATUS

In another study by Kelly et al,.in 2007 on Prevalence and characteristics of opioid use in the US adult population describes the prevalence of opioid use in the US adult population, overall and in subgroups, the characteristics of opioid use, and concomitant medication use among opioid users. Data were obtained from the Slone Survey, a population-based random-digit dialing survey. One household member was randomly selected to answer a series of questions regarding all medications taken during the previous week. There were 19,150 subjects aged P18 interviewed from 1998 to 2006. Opioids were used 'regularly' (P5 days per week for P4 weeks) by 2.0%; an additional 2.9% used opioids less frequently. Regular opioid use increased with age, decreased with education level, and was more common in females and in non-Hispanic whites. The prevalence of regular opioid use increased over time and was highest in the South Central region. Nearly one-fifth of regular users had been taking opioids for P5 years. Concomitant use of P10 non-opioid medications was reported by 21% of regular opioid users compared to 4.5% of subjects who did not use opioids. Regular opioid users were more likely to use stool softeners/laxatives (9% vs. 2%), proton pump inhibitors (25% vs. 8%), and antidepressants (35% vs. 10%). From this nationally-representative telephone survey, we estimate that over 4.3 million US adults are taking opioids regularly in any given week. Information on the prevalence and characteristics of use is important as opioids are one of the most widely prescribed classes of drugs in the US.[93]

A study by svendsent et al,.in 2014 on Persistent opioid use and socio-economic factors: a population-based study in Norway. The background population is the complete Norwegian population in 2001. The study population is derived from two groups aged 35 years or older in 2001 who met one of the following criteria in 2005: (1) persistent opioid users (n = 15,113) or (2) short-term opioid users (n = 214,061). The applied definition of persistent opioid use corresponds to an average daily dose

indicating likely daily use of opioids during 365 consecutive days. The socio-economic factors work status, income, marital status, immigrant status and education were obtained from the Population and Housing Census of 2001, and data on opioid use in 2005 were obtained from the complete national Norwegian Prescription Database. For logistic regression analyses, the study population was stratified by gender and by age over/under 67 years. The results showed Disability pension, not working, divorce, low income and low education in 2001 were associated with persistent opioid use in 2005.[94]

METACOGNITION

In a study to investigate the metacognitive characteristics of substance abusers by Toneatto et al,.in 1999 of 20 types of cognitive experience in 108 treatment-seeking substance abusers using 20 CEs related to alcohol or drug use as identified in a survey of the psychoactive substance expectancy, relapse, and reasons-for-use literatures. The major metacognitive effects of drugs and alcohol were reduction, detachment from, and intensification of the cognitive event. The major metacognitive consequences of not consuming a substance included beliefs that the cognitive experience would be too uncomfortable, sleep would be disturbed, persistence of the cognitive event, and intensification of the cognitive event. An interaction between metacognitive effects and consequences and the type of cognitive event was found.[95]

In a study by Marcantonio M. Spada et al, in 2015 on Metacognition in addictive behaviours. They worked on Self-Regulatory Executive Function (S-REF) model, for conceptualizing psychological distress (Wells & Matthews, 1994, 1996). The S-REF model proposes that psychological distress persists because of unhelpful coping styles (e.g. extended thinking and thought suppression) which are activated and maintained as a result of metacognitive beliefs. They also worked on triphasic metacognitive formulation of addictive behaviors proposes that aspects of

the CAS such as attentional bias, extended thinking (e.g. desire thinking, rumination and worry), disruption in metacognitive monitoring and thought suppression should be associated with addictive behaviors and lead to maladaptive consequences including increased levels of craving and engagement. The formulation also proposes that metacognitive beliefs should be associated with aspects of the CAS and addictive behaviors. Clinical implication of this study was Thetriphasic metacognitive formulation of addictive behaviors presented implies that MCT (Wells, 2000, 2009) may be applied to addictive behaviors. The study concluded that The S-REF model provides a conceptual framework for expressing how stored knowledge and beliefs about thinking processes influence the choice of plans and regulation of coping. A review of the research evidence indicates that the central features of the S-REF model; CAS configurations and metacognitive beliefs, are present in addictive behavior. These processes can be interpreted within a triphasic metacognitive formulation that has implications for adapting and targeting MCT for addictive behaviors. MCT has demonstrated efficacy in emotional disorders (Normann et al., 2014) and the current analysis leads to the hypothesis that it will be efficacious in treating addictive behaviors.[96]

In a study by Sara Wasmuthet., al. in 2015**,** it was examined whether persons with addiction(s) demonstrated specific patterns of metacognitive deficit on four subscales of metacognition measuring self-reflectivity, understanding others' thoughts, decentration, and mastery. Using a mixed-methods design, qualitative data were obtained via the Indiana Psychiatric Illness Interview, which was then rated using a quantitative scale, the Metacognition Assessment Scale-Abbreviated. Persons with addiction(s) demonstrated significant impairments in metacognitive mastery but not other areas of metacognition.[97]

In this study on metacognitive abilities in adults with substance abuse treated in therapeutic community by Felix Inchaustiet, al. (2016) A mixed-

methods (qualitative-quantitative) study was designed. Two hundred and sixteen adults aged 18-65 with principal diagnoses of SUDs (n = 52), SSDs (n = 49), and anxiety disorders (n = 115) were recruited. Qualitative data were obtained with the Metacognition Assessment Interview, which was then rated using a quantitative scale, the Metacognition Assessment Scale–Abbreviated (MAS–A). Data analysis was carried out in two stages using the SPSS statistical package version 21 (IBM Corp., 2012). Firstly, sociodemographic variables, age, and educational level of the participants of the three groups (SUDs, schizophrenia spectrum, and anxiety) were compared to determine whether it was necessary to use one of these variables as covariate in the subsequent analyses. Secondly, analysis of variance (ANOVA) or analysis of covariance (ANCOVA) were performed to compare the total mean score of the MAS-A in the target groups. If these differences were statistically significant ($p < .05$), the mean scores of the MAS-A subscales were compared. As estimator of the magnitude of the effects, the partial squared eta ($\eta 2$ p) statistic was used. Results: The anxiety disorders group had significantly higher MAS–A total scores than the SUDs group, and the SUDs group obtained significantly higher MAS–A total scores than the SSDs group. Concerning the MAS–A subscale scores, the SUDs group displayed significantly lower scores only on the Mastery subscale compared to the anxiety disorders group, with the SUDs and SSDs groups obtaining equivalent Mastery scores. Conclusions of the study was current interventions for addiction should focus more specifically on improving metacognitive Mastery.[98]

In another study by Hüseyin ÜNÜBOL et,.al in 2019.on Metacognitions of Substance-Addicted Patients Compared to Individuals Without a Diagnosis of a Psychiatric Disorder. The study included 34 patients under treatment with the diagnosis of substance dependence and 34 non-patient individuals without any substance dependence diagnosis. A socio-demographic information form, The Metacognitions Questionnaire-30 published in 2008, and The Addiction Profile Index published in 2012 were

used for the assessments in the study. The data produced by the administration of the scales were evaluated statistically using descriptive methods. The Kolmogorov-Smirnov distribution test was used for evaluating whether the data conform to a normal distribution. The t-test was used for comparing the parameters between the groups. The Pearson Correlation Analysis was used for comparing the differences between the scales. The study results demonstrated that the metacognition questionnaire scores of the patients being treated at the hospital for the diagnosis of substance dependence disorder were higher compared to those of the individuals without a psychiatric disorder. In regard to the assessment of the sub-dimensions of metacognition; the scores of the following subscales including the uncontrollability and danger, cognitive self-consciousness, and the need to control thoughts were higher in the substance dependent group compared to the control group. These results indicate that substance use has a negative impact on metacognition. It has also been determined that the metacognition of the negative beliefs about the uncontrollability of thoughts and danger, the positive beliefs about worry and the beliefs about the need to control thoughts were associated with the substance use characteristics and the frequencies of use. The study results suggest that the metacognitive processes and their sub-dimensions are important factors in the diagnosis and treatment of substance dependence; therefore, they should be considered to gain an insight into these processes.[99]

In a study by FaridehHamidi and JamshidGhasdi in 2020 on cognitive and metacognitive impairment of drug addicted a, internet addicted and normal individual in youth ages: a comparative study. : The study was causal-comparative and the population were three groups. The first group were all healthy university students, the second group were drug addicted people and the third group were those with Internet addiction. The total sample size was 180 people who were selected using simple random sampling method. Data was collected using meta-cognitive questionnaire

(MCQ), cognitive failure questionnaire (CFQ), and Young's internet addiction test (IAT). Data were analyzed using one-way analysis of variance (ANOVA) and Schefft's post hoc applying SPSS. Results showed that negative thoughts, distractibility, blunders and all uncontrollability components were highest among the drug-addicted people and students with Internet addiction ($P \leq 0.01$). The difference in the components of positive beliefs, cognitive self-consciousness and cognitive trust in all three groups was confirmed and the highest mean was in the normal group ($P \leq 0.01$). Ultimately, memory-related deficiencies and lack of recalling names were in the highest level among the students with Internet addiction ($P \leq 0.01$). Results illuminate the role of cognitive and metacognitive beliefs in the emergence and persistence of any type of addiction. Therefore, it is recommended to start school-related behavioral and mind control training to prevent addiction and high-risk behaviors.[100]

DEFENSE STYLES

In a study by D. Raketic et al,. in 2009 on women addiction (alcohol and opiates) and defense mechanism style, sample of alcohol and opiate female addicts (30 patients in each group) plus control group (30 women) with no psychiatric diagnosis were questioned with Defense Style Questionnaire - DSQ 40 (Andrews, Singh, Bond, 1993). Results found no statistically relevant differences between two experimental and one control group concerning mature defense mechanism use. Significant differences were found in neurotic and immature defense mechanism use: alcohol addicts use prevalently neurotic mechanisms and immature mechanisms prevail among opiate addicts. Conclusions of the research was that neurotic defense mechanisms was mostly used by alcohol addicts were: pseudoaltruism, idealization, and undoing. The mostly used immature defense mechanisms among opiate addicts were: phantasy, isolation, devaluation, denial and splitting.[101]

In a study by Antonio Prunas in 2014 on Defensive functioning and psychopathology: a study with the REM-71. The aim of the present study is to explore the association between defensive functioning (as assessed through the REM-71) and psychiatric symptoms in a large sample from the community, and the moderating role of age and gender on that association. Furthermore, we explored the concurrent validity of REM-71 as compared with “caseness” (SCL-90-R). It was found that Factor 1 defenses were by far the primary contributors to the predictor synthetic variable (i.e. association between defenses and psychopathology). Gender proved to moderate the association between immature defenses and symptoms. Using ROC analysis, we derived a cut-off score for Factor 1 defenses.[102]

in a study by Rossella Di Pierro, in 2015 on difficulties in emotion regulation among inpatients with substance use disorders: the mediating effect of mature defenses mechanisms Difficulties in emotion regulation and defense mechanisms were evaluated in 58 SUDs inpatients and 73 community participants. Results showed that SUDs are associated with limited access to emotion regulation strategies when negative emotions are experienced. This relationship between difficulty in accessing emotion regulation strategies and the presence of SUDs was mediated by mature defenses. The more difficulties in accessing such strategies were, the less mature defenses were used; the less mature defenses were used, the more likely the presence of SUDs was. Conclusions of the findings suggest the importance of considering mature defense mechanisms in understanding difficulties in emotion regulation among SUD inpatients. Research and Clinical implications are discussed.[103]

In another study by Pranami Baruaet,.al. in 2016 on Defense mechanism and coping styles in individuals with psychoactive substance use disorders and controls: A comparative study. It was attempted to see the application of defense mechanism and ways of coping between substance

abusers and the control group. Result suggestive difference in defense mechanisms & coping styles found between substance abusers and control group. Significant correlation found between several domain of defense mechanism and way of coping.[104]

In a study by KatarzynaIwanicka et, al. (2017) on Psychopathological symptoms, defense mechanisms and time perspectives among subjects with alcohol dependence (AD) presenting different patterns of coping with stress. Authors used Participants were given a battery of psychological tests—Coping Inventory for Stressful Situations (CISS), Defense Style Questionnaire (DSQ 40), Syndrom Checklist (SCL-90) and Short Zimbardo Time Perspective Inventory (SZPTI-PL). The sample comprised 112 individuals with alcohol dependence, aged 20 to 63 years old, the average age was 37.86; 78 percent were men. There were identified three sub-groups of individuals characterized by a distinctive patterns of coping with stress —''emotionalavoidant'', ''task oriented'' and a ''mixed one'. In the study it was found that. Individuals with the predominant emotional-avoidant coping pattern are characterized by significantly higher severity of psychopathological symptoms, less mature defense mechanisms.[105]

In another study by Elisabeth Punzi & Karin Lindgren (2018) on Relationships, Emotions, and Defenses Among Patients with Substance Use Disorders, Assessed with Karolinska Psychodynamic Profile: Possibilities to use Intensive Short-Term Dynamic Psychotherapy in Substance Abuse Treatment. It was found that e participants had considerable or severe difficulties with interpersonal relationships, and seven of them predominantly used primitive defenses. The defenses mitigated conflicts momentarily. In the long run the defenses however hindered self-observing capacity and influenced the interaction with others negatively. The participants expressed fear of abandonment and separation, and self-attacks were described.[106]

In a study by Alessandro Taurino (2021) to investigate potential differences in the defensive functioning between SUD patients and non-clinical controls. The authors assessed defensive functioning (Response Evaluation Measure-71, REM-71) of 171 SUD patients (17% female; mean age = 36.5), compared to 155 controls. Authors performed a series of ANOVAs to investigate the defensive array in SUD patients compared to that of non-clinical controls. Student t test for independent samples was used to compare clinical characteristics between the SUD group and the controls. It was found that patients presented a more maladaptive/assimilation (Factor 1) defensive array ($p < .001$). Among SUD sub-groups, Alcohol Use Disorder patients showed more dysfunctional defenses. Factor 1 defenses were related to a worse psychological functioning.[107]

MORAL DECISION MAKING

In a study by Martina Carmona-Perera et al,.in 2012 on Moral decision-making in polysubstance dependent individuals. They assessed 32 polysubstance dependent males and 32 non-drug using controls using a previously validated moral judgment task, including non-moral scenarios, and moral dilemmas that were either high in emotional salience (“personal scenarios”) or low in emotional salience (“impersonal scenarios”). And instruments used were Interview for research on addictive behavior. Structured clinical interview for DSM-IV and Moral judgment task. Polysubstance dependent individuals endorsed more utilitarian choices for personal dilemmas (e.g., smothering a baby to save a group of hidden people during wartime). These choices were also perceived as less difficult. Severity of alcohol use correlated with the proportion of utilitarian judgments. Conclusion of the study was Polysubstance dependent individuals show a more utilitarian pattern of moral decision making for personal moral scenarios.[108]

Another study by Henderson et al,.in 2017 on The Moral Foundations of Addiction Causality and Attributional Stigma, utilized the Moral Foundations Questionnaire to ascertain political leanings and to better understand mechanisms of moral decision-making. Shweder and collaborators (1997), followed by Haidt and Joseph (2007) posited a set of principles that essentially underlie how individuals make moral decisions. Reliance on the fairness foundation was associated with low stigma attribution, whereas reliance on the purity foundation was associated with high stigma attribution. Further, reliance on the purity foundation and adherence to the moral version of the model interacted to lead to higher levels of attributed stigma. These results suggest that these broad political orientations, along with more specific knowledge of the cultural model of addiction causality, combine to orient an individual with respect to stigma attribution. [109]

MATERIALS AND METHODS

SOURCE OF DATA

Study was conducted on 50 opioid use disorder and 50 healthy individuals as control group, admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College and Hospital.

METHOD OF COLLECTION OF DATA

DESIGN: cross sectional study.

SAMPLE SIZE: 50 patients diagnosed with Opioid use disorder and 50 healthy control.

SAMPLE DESIGN: Purposive sampling design was used. The respondents who meet the inclusion criteria was selected for the study.

SAMPLE COLLECTION- The study was be conducted on of 50 patients with opioid use disorder and 50 healthy individuals as control group from 18 to 65 years of age, admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College and Hospital.

INCLUSION CRITERIA (experimental group)

- Patients having a diagnosis of opioid use disorder according to ICD 11.
- Gender: male
- Age group between 18 to 65 years.
- Patients having opioid use disorder, admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College and Hospital.
- Patients willing to give informed consent.

EXCLUSION CRITERIA (experimental group)

- Patients with opioid use disorder or any psychiatric comorbidity.
- History of intellectual disability.
- Major neurological disorder and communication disorder.

- Patients not willing to give informed consent.

INCLUSION CRITERIA (control group)

- Healthy control group not having any psychiatric illness.
- Gender: male
- Individuals not having the diagnosis of any SUD.
- Age group between 18 to 65 years.
- Patients willing to give informed consent.

EXCLUSION CRITERIA (control group)

- Patients with any psychotic illness, developmental disability and intellectual disability.
- Patients not willing to give informed consent.

METHODOLOGY

The study was conducted on 50 patients of opioid use disorder and 50 individuals without SUD (control group) from 18 to 55 years of age, admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College, Ludhiana. Socio Demographic Proforma was filled containing the basic information of the subject and they was evaluated for metacognition using metacognition questionnaire -30, defense style using defense style questionnaire-40 and morality using moral foundation questionnaire.

TOOLS

1. Socio-Demographic Proforma
2. Metacognition questionnaire -30
3. Defense style questionnaire-40
4. Moral foundation questionnaire

1. Socio- demographic Proforma Information was collected through pre-designed, semi structured proforma for each patient in order to collect

information of each participant. The socio- demographic details included name, age, sex, marital status, religion, education, occupation, socio-economic status, presenting complaints, past history of Opioid/ drug abuse and psychiatric illness.

2. **The Metacognitive Questionnaire(MCQ-30):** comprises five subscales:- positive beliefs about worry; negative beliefs about thoughts of danger and uncontrollability; the need to control thoughts; cognitive confidence regarding attention and memory; and cognitive self-consciousness (attending to thought processes), (Wells & Cartwright-Hatton, 2004).Respondents complete the questionnaire by rating the extent to which they agree with the 30 items on a four-point scale. The measure comprises 30 statements regarding beliefs about worry. Respondents complete the questionnaire by rating the extent to which they agree with the 30 items on a four-point scale. Scores for each of the five subscales are calculated by summing the responses from the six items that comprise that factor.

Wells and Cartwright-Hatton (2004) assessed the reliability of the MCQ-30 during its development by administering it to a convenience sample of 182 students, university staff and health service employees. They examined internal consistency using Cronbach‟s alpha. Alpha scores for four of the subscales ranged from 0.91 to 0.93, and the „need to control thoughts‟ subscale yielded an alpha score of 0.72, (Wells & Cartwright-Hatton, 2004). The alpha score for the total was 0.93, therefore the measure demonstrated good to excellent internal consistency on the five subscales and overall score, (Wells & Cartwright-Hatton, 2004). The stability of the MCQ-30 was assessed by re-testing the sample at a mean interval of 34 days, (range from 22 to 118 days). Repeated measures t-tests demonstrated no significant differences on the subscales or total score between the two administrations, (Wells & Cartwright-Hatton, 2004). Pearson re-test correlations were significant, ranging from 0.59 to 0.87 for

the subscales and 0.75 for the total scale, (Wells & Cartwright-Hatton, 2004).

The convergent validity of the MCQ-30 was demonstrated by significant positive correlations between the subscales and measures of related constructs (Wells & Cartwright Hatton, 2004). The construct validity of the scale was examined using exploratory factor analysis; the authors concluded that the five factor structure was a good fit for the measure, and that factor composition replicated that of the full version of the MCQ, (Wells & Cartwright-Hatton, 2004).

3. **Defense Style Questionnaire (DSQ-40):** Andrews and colleagues (1993) created a 40 item version from the 82 and 88 item scales. In comparison to prior versions of the DSQ, the development of the 40 item appears more rigorous.. DSQ-40 can yield 20 different defense styles and they are divided into three sub categories: Immature (12): projection, passive aggression, acting out, devaluation, autistic fantasy, isolation, splitting, somatization, denial, displacement, dissociation, rationalization Neurotic (4): undoing, pseudoaltruism, idealization, reaction formation Mature (4): sublimation, humor, anticipation, suppression. Test-retest reliability 0.66 over 4 weeks and Coefficient alpha: 0.68 mature, 0.58 neurotic, 0.80 immature

The test retest coefficient were uniformly high across the 72- and 40- item forms. In addition, using the original short form of DSQ it was found that 18-month test-retest correlation of .71 for the mature factor and .60 for immature factor in a sample of 56 normal subjects.

4. **Moral Foundation Questionnaire (MFQ20):** The Moral Foundations Questionnaire (MFQ) is 20 item, 6 point scale, self-report measure that was designed to assess the degree to which people prioritize five foundational domains in moral decision-making: Harm/Care, Fairness/Reciprocity, In-group/Loyalty, Authority/Respect, and Purity/Sanctity (Graham et al. 2011). These five domains are described in

Moral Foundations Theory (MFT). Cronbach's alphas is 0.65- 0.84 and test-retest reliabilities (Pearson correlations), approximately one month between t1 and t2, was 0.69- 0.82. Scoring is done n the basis of homogeneous categorization of items into subcategories and their score summation.

STATISTICAL ANALYSIS

Data was described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups was done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. Spearman's Rank Correlation was done to find relationship between variables. For comparing categorical data, Chi square ($\chi 2$) test was performed and exact test was used when the expected frequency is less than 5. A probability value (p value) less than 0.05 was considered statistically significant. All statistical calculations was done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

OBSERVATIONS AND RESULTS

TABLE 1: Distribution of participants in control group and study group on the basis of age.

	Study group		**Control Group**		Z	df	p-value
	Mean	SD	Mean	SD			
AGE (YRS)	36.54	11.65	33.48	10.96	-1.387	98	NS (0.05)

FIGURE 1: Distribution of participants in control group and study group on the basis of age.

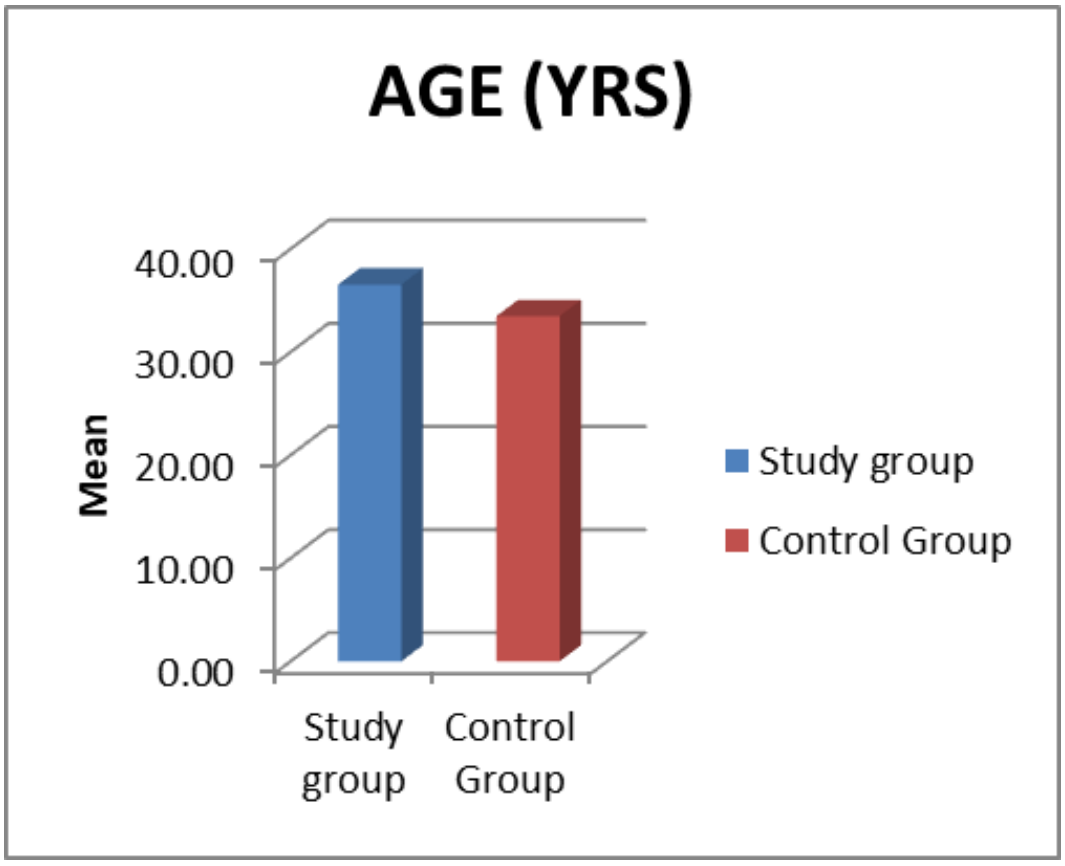


TABLE 2: Distribution of participants in control group and study group on the basis of qualification.

		Study group		Control Group		Total	Chi-square value	df	p-value
		No. of cases	percentage	No. of cases	percentage				
EDUCATION	10TH	13	26.0%	3	6.0%	16	16.129	4	0.003
	12TH	14	28.0%	15	30.0%	29			
	GRADUATE	16	32.0%	20	40.0%	36			
	POST GRADUATE	3	6.0%	12	24.0%	15			
	UP TO MATRIC	4	8.0%	0	0.0%	4			
Total		50	100.0%	50	100.0%	100			

Figure 2: Distribution of participants in control group and study group on the basis of qualification.

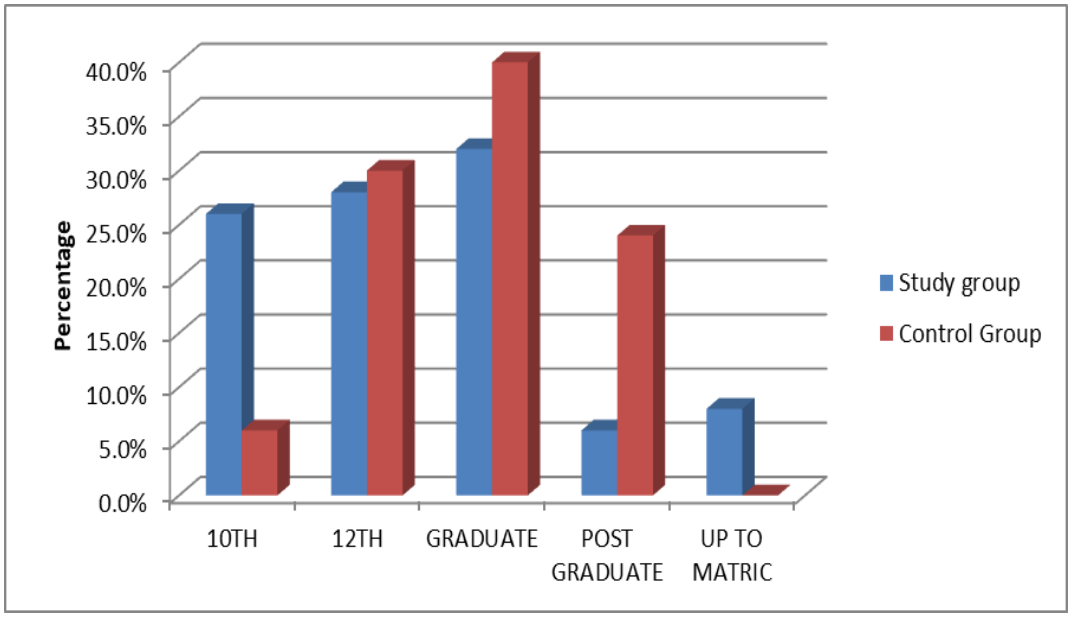


Table 3: Distribution of participants in study group and control group on the basis of occupation.

		Study group		Control Group		Total	Chi-square value	df	p-value
		Study group	Study group	Control Group	Control Group				
OCCUPATION	CLERICAL,SHOP OWNER/FARM	1	2.0%	0	0.0%	1	19.24	6	0.004
	FARMER/CLERICAL/ SHOPKEEPER	26	52.0%	19	38.0%	45			
	PROFESSIONAL	2	4.0%	12	24.0%	14			
	SEMI SKILLED WORKER	1	2.0%	0	0.0%	1			
	SEMI-SKILLED/SKILLED WORKER	12	24.0%	7	14.0%	19			
	STUDENT	0	0.0%	7	14.0%	7			
	UNEMPLOYED	8	16.0%	5	10.0%	13			
Total		50	100.0%	50	100.0%	100			

Figure 3: Distribution of participants in study group and control group on the basis of occupation.

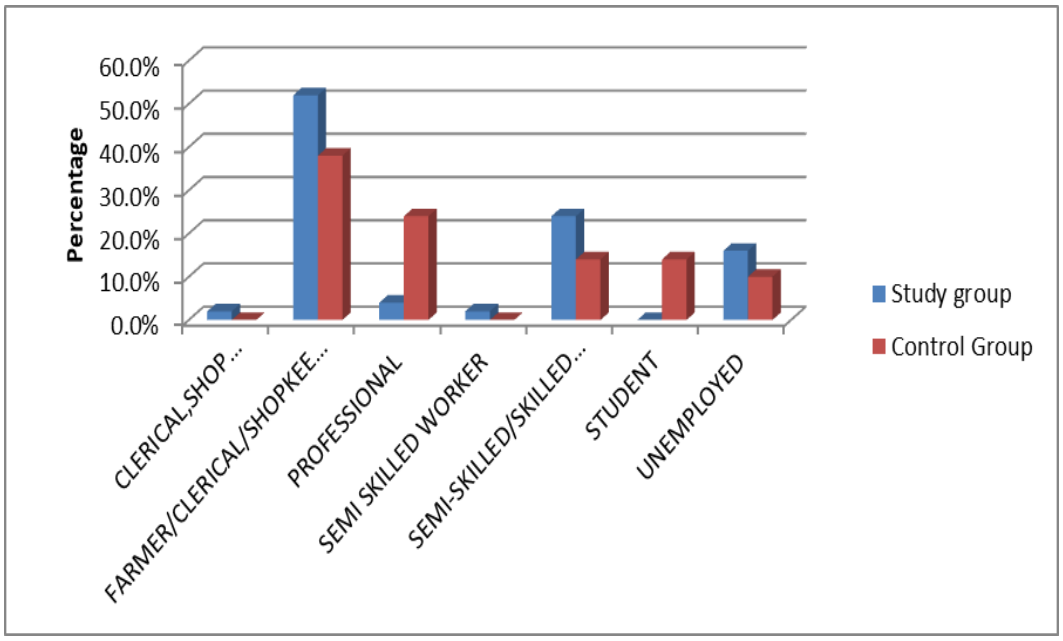


Table 4: Distribution of participants in study group and control group on the basis of socio-economic status.

		Study group		Control Group		Total	Chi-square value	df	p-value
		Study group	Study group	Control Group	Control Group				
SES	LOWER MIDDLE	17	34.0%	5	10.0%	22	9.74	2	0.008
	UPPER LOWER	1	2.0%	0	0.0%	1			
	UPPER MIDDLE	32	64.0%	45	90.0%	77			
Total		50	100.0%	50	100.0%	100			

Figure 4: Distribution of participants in study group and control group on the basis of socio-economic status.

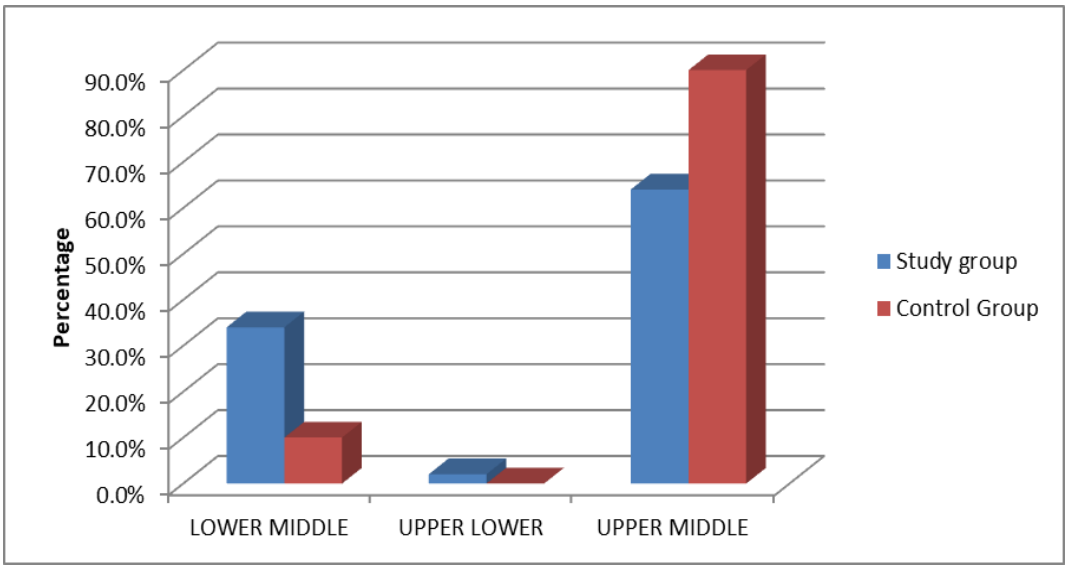


Table 5: shows mean difference between study group and control group on different subscales of metacognitive questionnaire.

	Study group		Control Group		Z	df	p-value	Difference	
	Mean	SD	Mean	SD				Mean	Std. Error
MCQ-CC	18.50	4.68	11.24	4.25	-6.173	98	0.001	7.26	0.89
MCQ-PBW	13.72	4.54	18.52	4.22	-4.871	98	0.001	-4.80	0.88
MCQ-CSC	14.48	4.57	18.26	4.21	-4.242	98	0.001	-3.78	0.88
MCQ-UD	19.00	3.88	12.72	4.43	-6.138	98	0.001	6.28	0.83
MCQ-NCT	18.54	4.82	15.08	4.82	-3.600	98	0.001	3.46	0.96

[MCQ-CC- Metacognition questionnaire – cognitive confidence; MCQ-PBW-Metacognition questionnaire- positive beliefs about worry; MCQ-CSC-Metacognition questionnaire- cognitive self-consciousness; MCQ-UD: Metacognition questionnaire-uncontrollability and danger; MCQ-NCT: Metacognition questionnaire-Need to control thoughts]

Figure 5: shows mean difference between study group and control group on different subscales of metacognitive questionnaire.

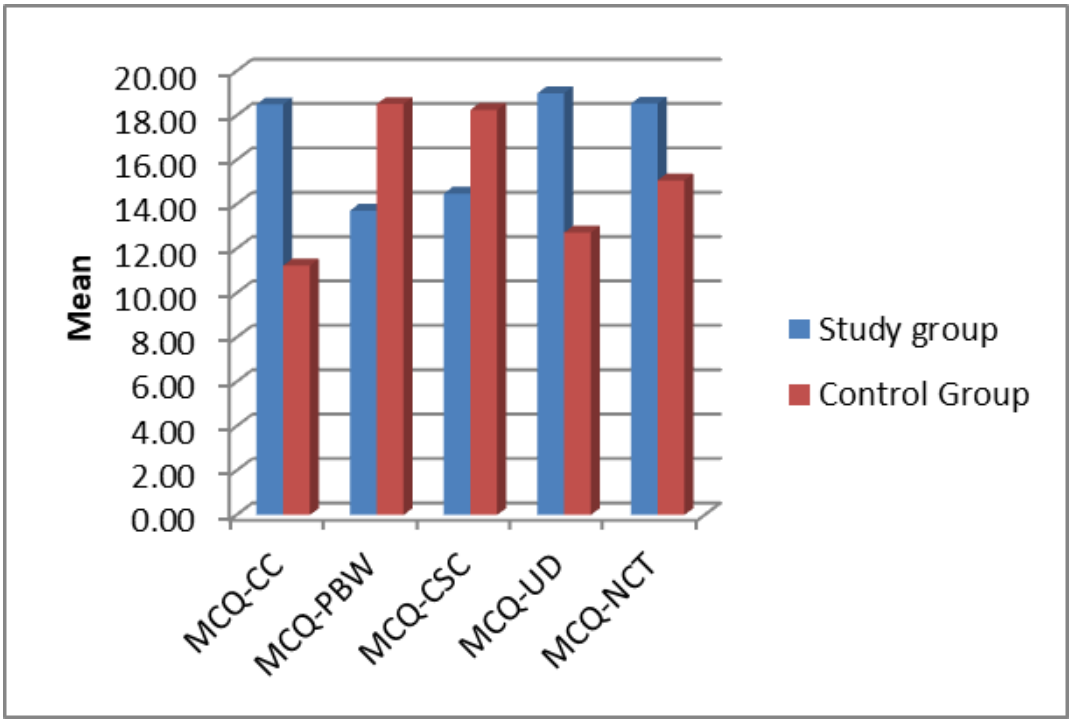


Table 6: shows mean difference between study group and control group on different subscales of defense style questionnaire.

	Study group		Control Group		Z	df	p-value	Difference	
	Mean	SD	Mean	SD				Mean	Std. Error
DM-MATURE	32.98	9.24	46.16	9.84	-5.940	98	0.001	-13.18	1.91
DM NEUROTIC	44.70	10.58	42.60	12.60	-0.824	98	NS (0.05)	2.10	2.33
DM IMMATURE	168.36	23.05	113.52	24.30	-7.698	98	0.001	54.84	4.74

[DM-MATURE: Defense mechanism-Mature; DM-NEUROTIC: Defense mechanism-neurotic; DM-IMMATURE: Defense mechanism-immature]

Figure 6: shows mean difference between study group and control group on different subscales of defense style questionnaire.

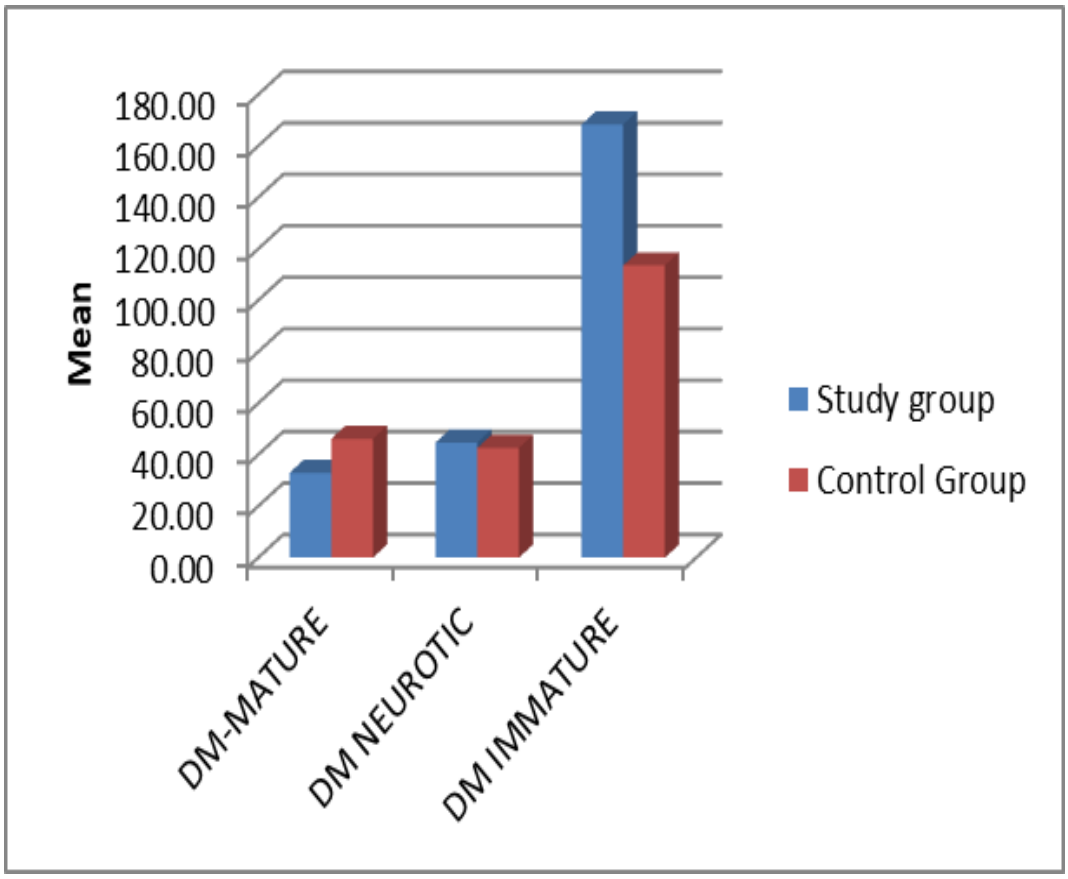


Table 7: shows mean difference between study group and control group on different subscales of Moral foundation questionnaire.

	Study group		Control Group		Z	df	p-value	Difference	
	Mean	SD	Mean	SD				Mean	Std. Error
MFQ-H	19.82	6.89	22.34	5.81	-2.129	98	0.033	-2.52	1.27
MFQ-F	17.42	6.35	21.02	5.62	-2.867	98	0.004	-3.60	1.20
MFQ-I	17.36	6.74	19.26	6.51	-1.526	98	NS (0.05)	-1.90	1.33
MFQ-A	12.78	4.48	21.86	4.64	-7.040	98	0.001	-9.08	0.91
MFQ-P	13.28	4.66	21.18	5.06	-6.380	98	0.001	-7.90	0.97

[MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P:Moral foundation questionnaire-Purity]

Figure 7: shows mean difference between study group and control group on different subscales of Moral foundation questionnaire.

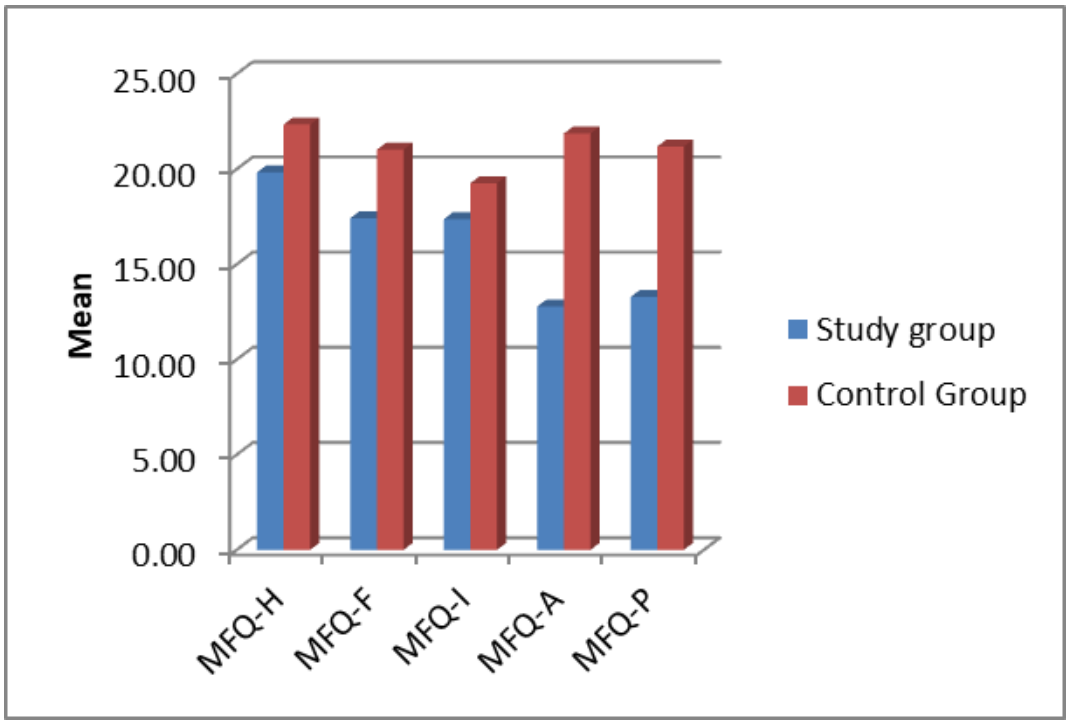


Table 8: shows correlation between age and subscales of metacognition questionnaire in study group.

	Spearman's rho	MCQ-CC	MCQ-PBW	MCQ-CSC	MCQ-UD	MCQ-NCT
AGE (YRS)	Correlation Coefficient	-0.051	0.161	-0.052	0.184	-0.147
	p-value	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50	50	50

[MCQ-CC: Metacognition questionnaire – cognitive confidence; MCQ-PBW: Metacognition questionnaire- positive beliefs about worry; MCQ-CSC: Metacognition questionnaire- cognitive self-consciousness; MCQ-UD: Metacognition questionnaire-uncontrollability and danger; MCQ-NCT: Metacognition questionnaire-Need to control thoughts]

Figure 8: shows correlation between age and subscales of metacognition questionnaire in study group.

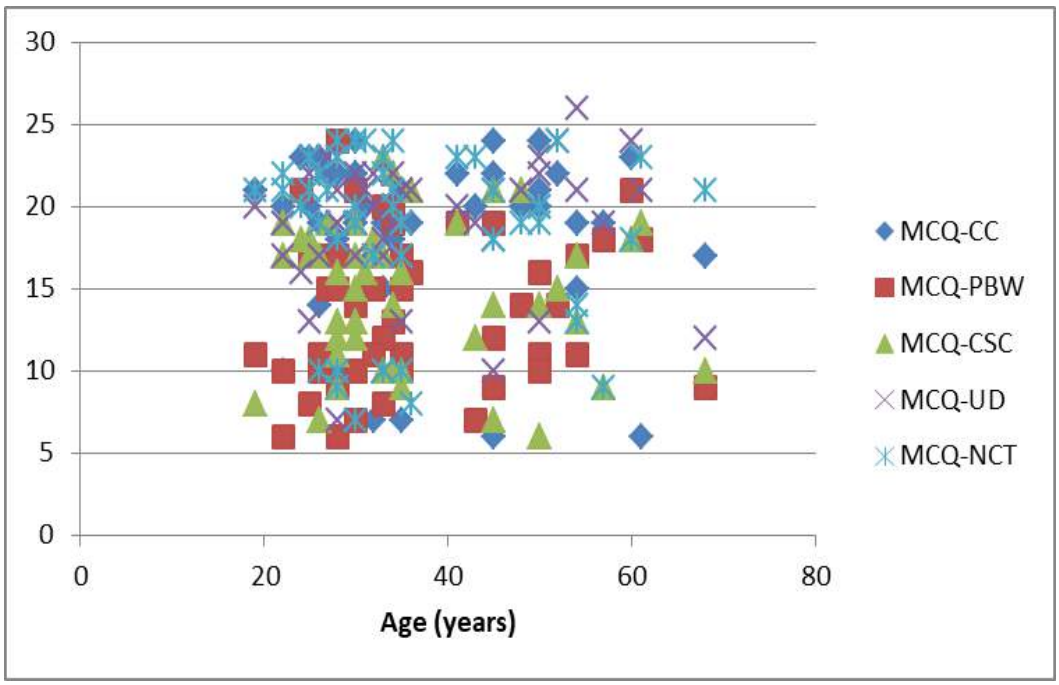


Table 9: shows correlation between age and subscales of Defense Style questionnaire in study group.

	Spearman's rho	DM-MATURE	DM NEUROTIC	DM IMMATURE
AGE (YRS)	Correlation Coefficient	0.286	-0.029	0.126
	p-value	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50

[DM-MATURE: Defense mechanism-Mature; DM-NEUROTIC : Defense mechanism-neurotic; DM-IMMATURE: Defense mechanism-immature]

Figure 9: shows correlation between age and subscales of Defense Style questionnaire in study group.

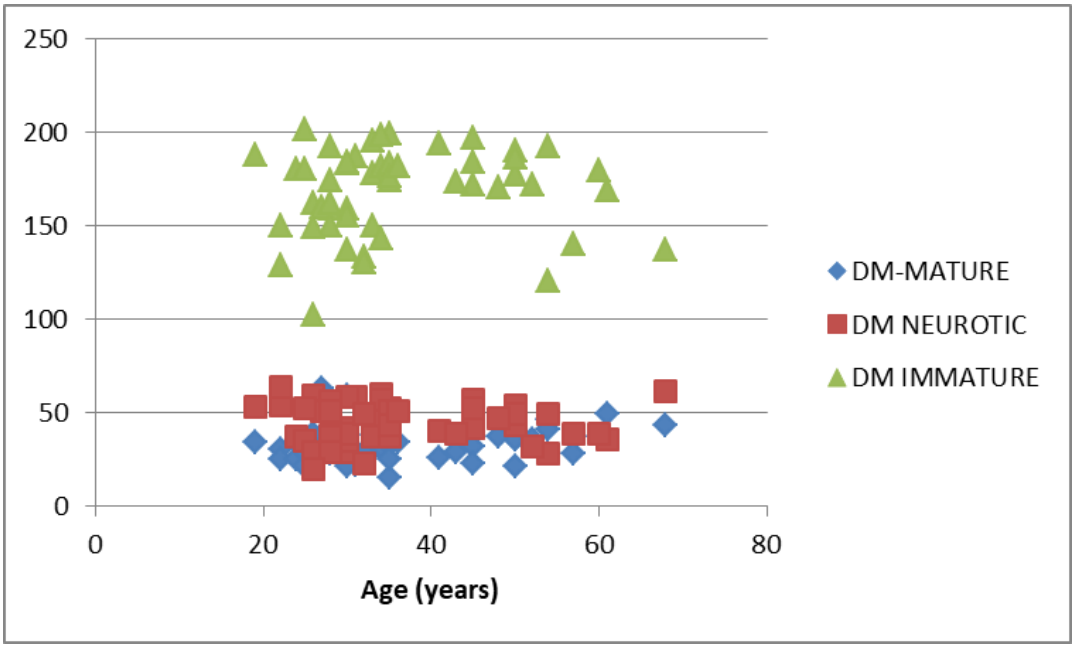


Table 10: shows correlation between age and subscales of Moral foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
AGE (YRS)	Correlation Coefficient	0.075	0.151	-0.112	0.215	-0.282
	p-value	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)	**0.048**
	N	50	50	50	50	50

[MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-In group; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P:Moral foundation questionnaire-Purity]

Figure 10: shows correlation between age and subscales of Moral foundation questionnaire in study group.

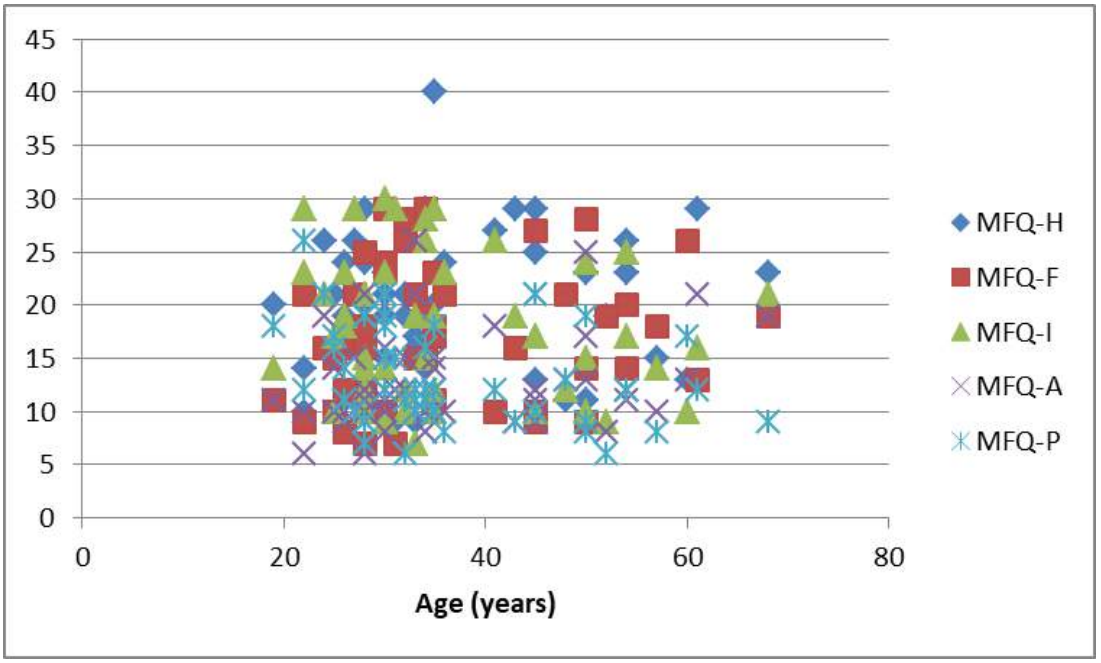


Table 11: shows correlation between cognitive confidence in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

[MCQ-CC: Metacognition questionnaire – cognitive confidence; DM-

	Spearman's rho	DM-MATURE	DM NEUROTIC	DM IMMATURE
MCQ-CC	Correlation Coefficient	-0.136	-0.044	0.122
	p-value	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50

MATURE: Defense mechanism-Mature; DM-NEUROTIC: Defense mechanism-neurotic; DM-IMMATURE: Defense mechanism-immature]

Figure 11: shows correlation between cognitive confidence in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

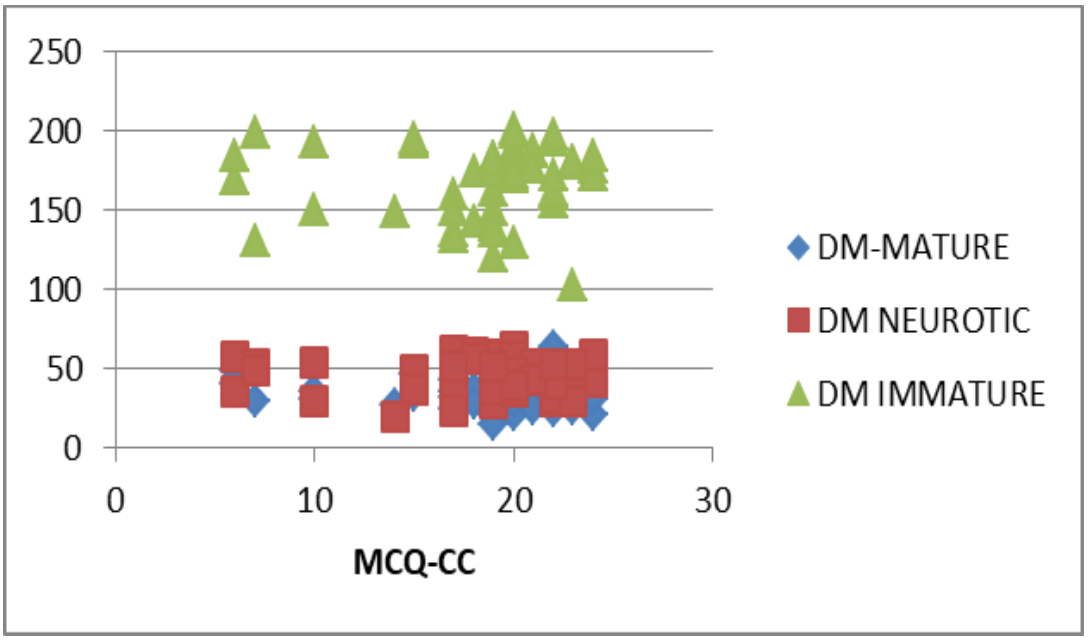


Table 12: shows correlation between cognitive confidence in metacognition questionnaire and subscales of Mora Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
MCQ-CC	Correlation Coefficient	-0.014	-0.077	0.117	-0.076	0.294
	p-value	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)	0.039
	N	50	50	50	50	50

[MCQ-CC Metacognition questionnaire – cognitive confidence; MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P:Moral foundation questionnaire-Purity]

Figure 12: shows correlation between cognitive confidence in metacognition questionnaire and subscales of Mora Foundation questionnaire in study group.

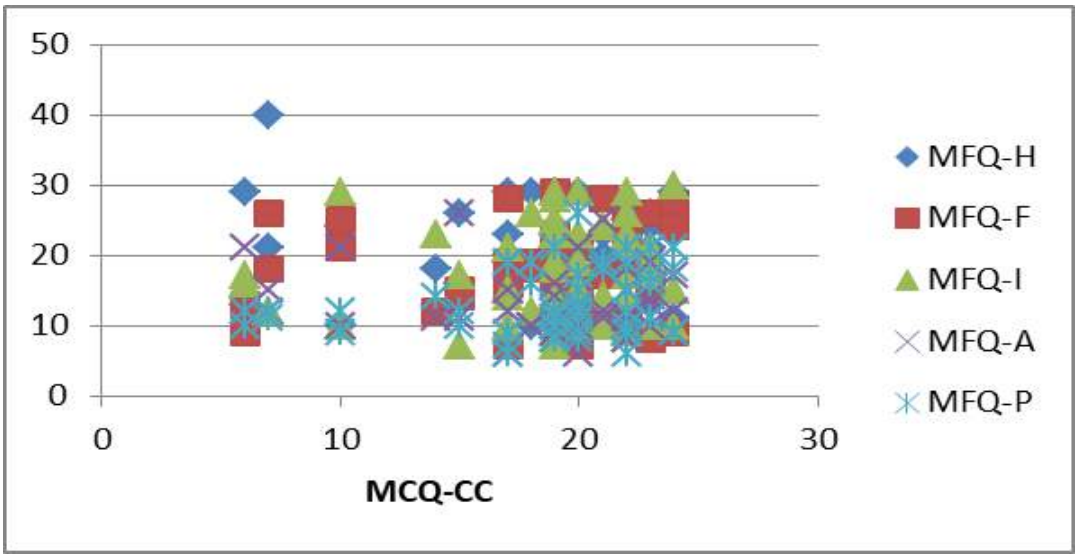


Table 13: shows correlation between Positive beliefs about worry in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

	Spearman's rho	DM-MATURE	DM NEUROTIC	DM IMMATURE
MCQ-PBW	Correlation Coefficient	0.201	0.029	0.136
	p-value	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50

[MCQ-PBW: Metacognition questionnaire- positive beliefs about worry**;** DM-MATURE: Defense mechanism-Mature; DM-NEUROTIC: Defense mechanism-neurotic; DM-IMMATURE: Defense mechanism-immature]

Figure 13: shows correlation between Positive beliefs about worry in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

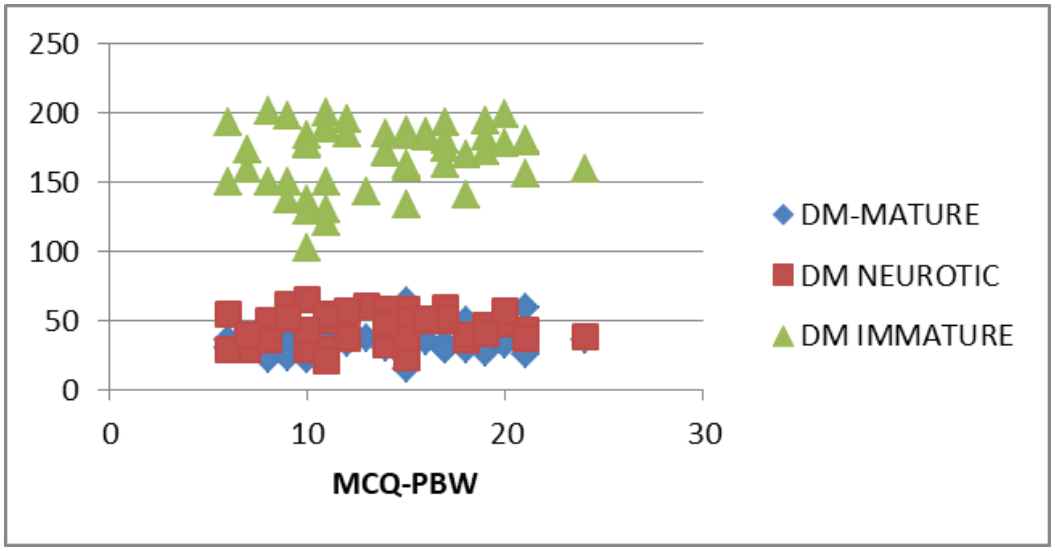


Table 14: shows correlation between Positive beliefs about worry in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
MCQ-PBW	Correlation Coefficient	0.045	0.075	0.213	0.009	0.105
	p-value	0.757	0.605	0.138	0.949	0.469
	N	50	50	50	50	50

[MCQ-PBW Metacognition questionnaire- positive beliefs about worry; MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P: Moral foundation questionnaire-Purity]

Figure 14: shows correlation between Positive beliefs about worry in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

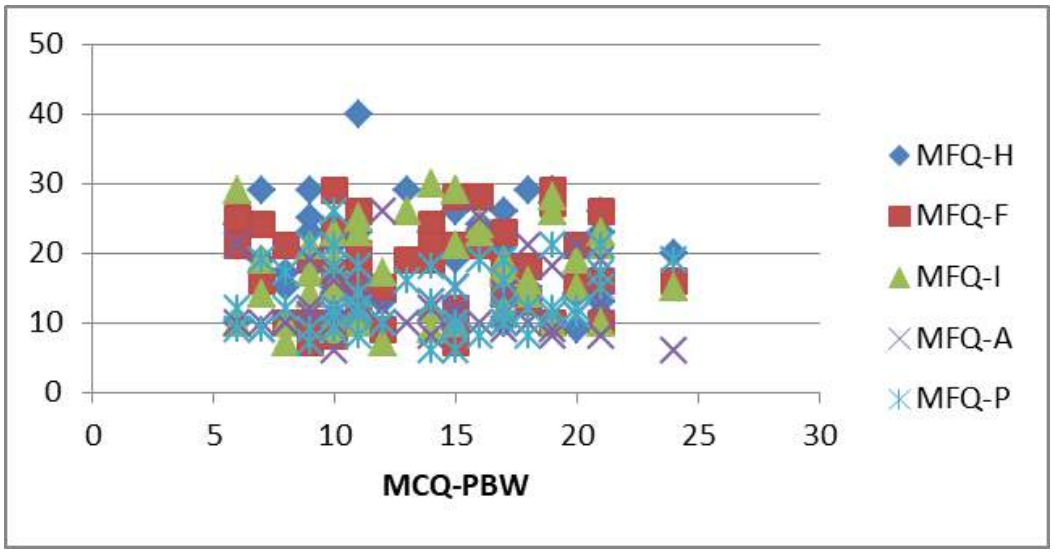


Table 15: shows correlation between Cognitive self-consciousness in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

	Spearman's rho	DM-MATURE	DM NEUROTIC	DM IMMATURE
MCQ-CSC	Correlation Coefficient	0.114	-0.042	-0.068
	p-value	0.429	0.774	0.640
	N	50	50	50

[MCQ-CSC Metacognition questionnaire- cognitive self-consciousness; DM-MATURE: Defense mechanism-Mature; DM-NEUROTIC: Defense mechanism-neurotic; DM-IMMATURE: Defense mechanism-immature]

Figure 15: shows correlation between Cognitive self-consciousness in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

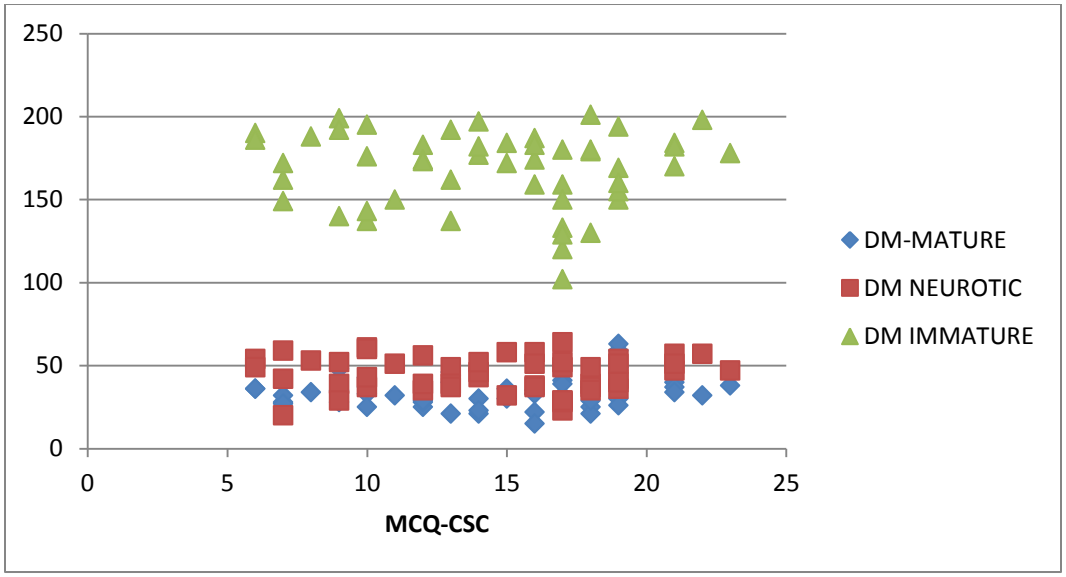


Table 16: shows correlation between Cognitive self-consciousness in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
MCQ-CSC	Correlation Coefficient	-0.155	-0.052	0.219	0.023	0.008
	p-value	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50	50	50

[MCQ-CSC Metacognition questionnaire- cognitive self-consciousness; MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P: Moral foundation questionnaire-Purity]

Figure 16: shows correlation between Cognitive self-consciousness in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

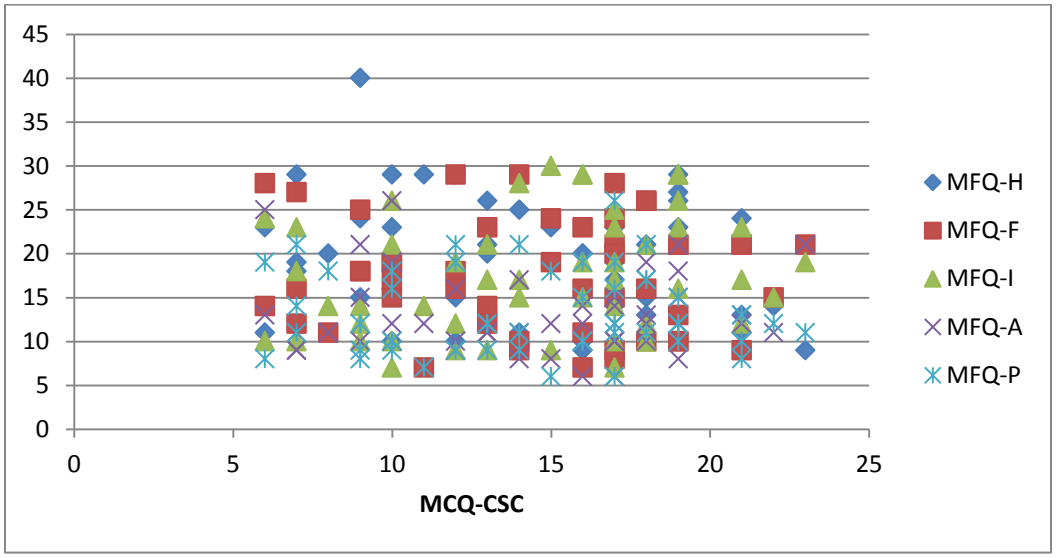


Table 17: shows correlation between Uncontrollability and danger in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

	Spearman's rho	DM-MATURE	DM NEUROTIC	DM IMMATURE
MCQ-UD	Correlation Coefficient	0.416	-0.168	-0.116
	p-value	0.003	NS (0.05)	NS (0.05)
	N	50	50	50

[MCQ-UD Metacognition questionnaire-uncontrollability and danger; DM-MATURE: Defense mechanism-Mature; DM-NEUROTIC: Defense mechanism-neurotic; DM-IMMATURE: Defense mechanism-immature]

Figure 17: shows correlation between Uncontrollability and danger in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

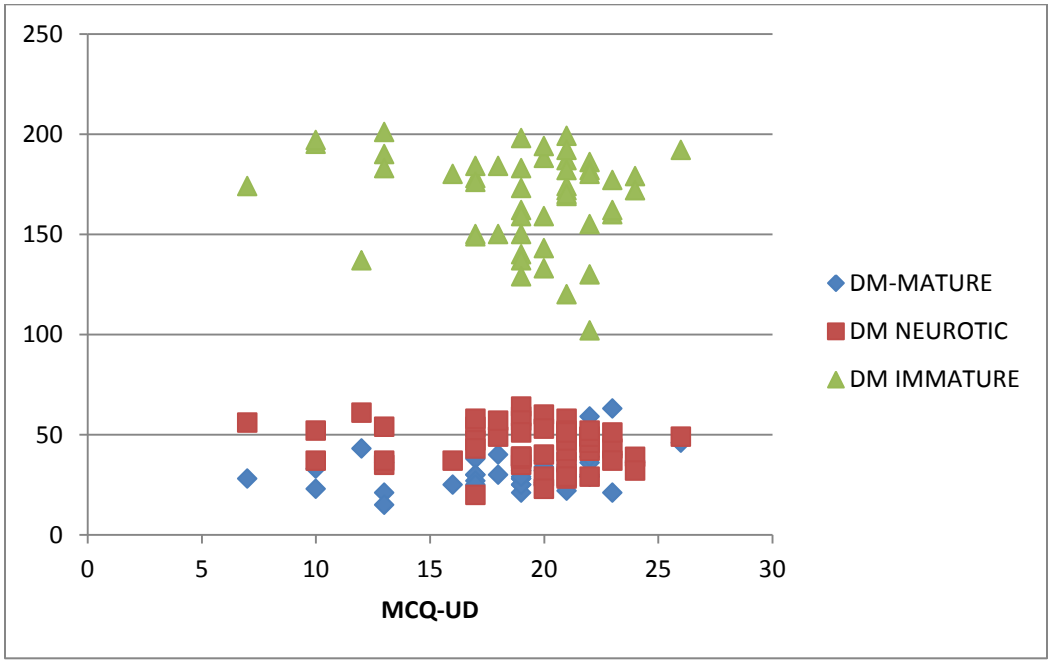


Table 18: shows correlation between Uncontrollability and danger in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
MCQ-UD	Correlation Coefficient	0.276	0.164	0.083	0.008	-0.156
	p-value	0.050	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50	50	50

[MCQ-UD Metacognition questionnaire-uncontrollability and danger; MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P: Moral foundation questionnaire-Purity]

Figure 18: Shows correlation between Uncontrollability and danger in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

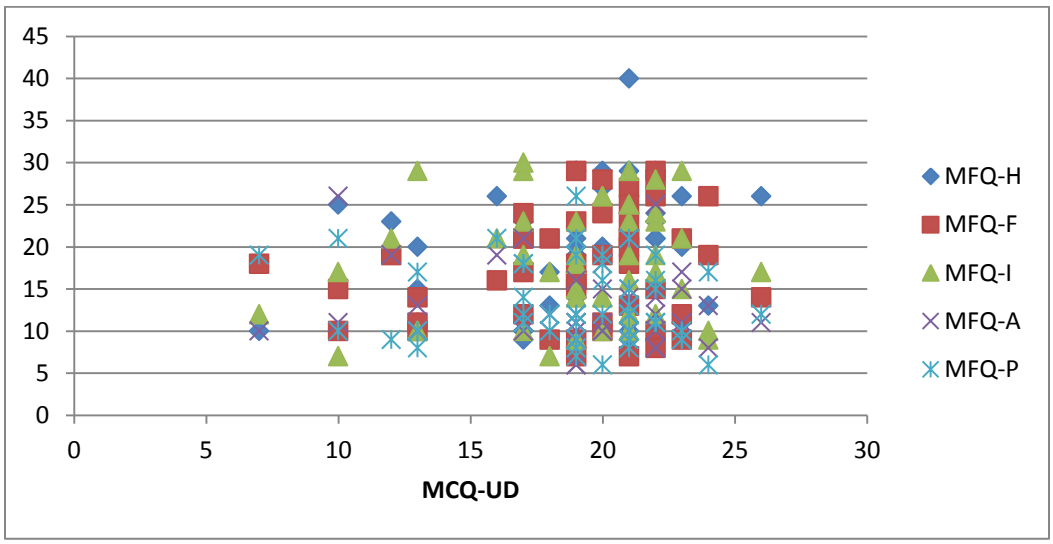


Table 19: shows correlation between Need to control Thoughts in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

	Spearman's rho	DM-MATURE	DM NEUROTIC	DM IMMATURE
MCQ-NCT	Correlation Coefficient	0.004	0.148	0.210
	p-value	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50

[MCQ-NCT Metacognition questionnaire-Need to control thoughts**;** DM-MATURE: Defense mechanism-Mature; DM-NEUROTIC: Defense mechanism-neurotic; DM-IMMATURE: Defense mechanism-immature]

Figure 19: shows correlation between Need to control Thoughts in metacognition questionnaire and subscales of Defense Style questionnaire in study group.

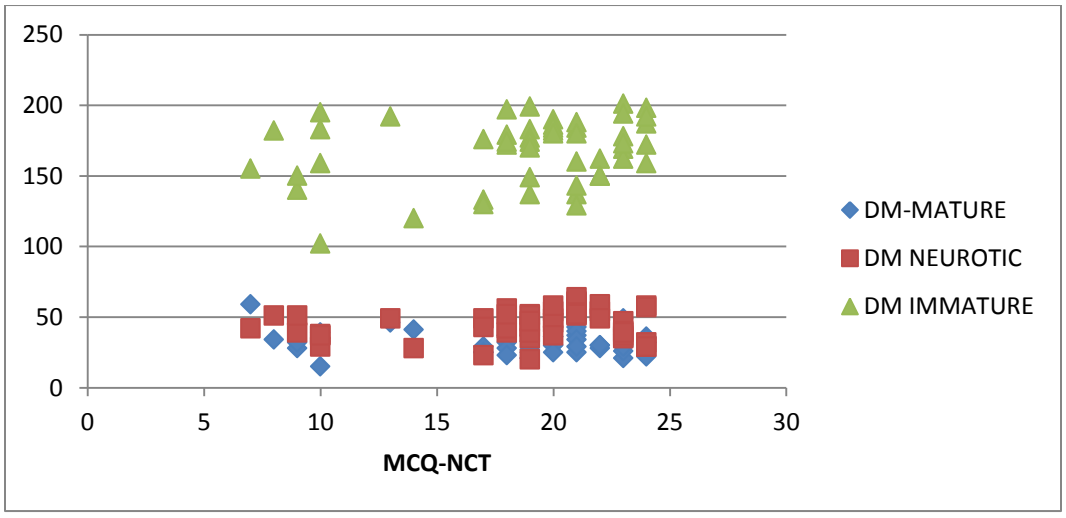


Table 20: shows correlation between Need to control Thoughts in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
MCQ-NCT	Correlation Coefficient	-0.111	-0.003	0.092	0.089	0.023
	p-value	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50	50	50

[MCQ-NCT Metacognition questionnaire-Need to control thoughts; MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P: Moral foundation questionnaire-Purity]

Figure 20: shows correlation between Need to control Thoughts in metacognition questionnaire and subscales of Moral Foundation questionnaire in study group.

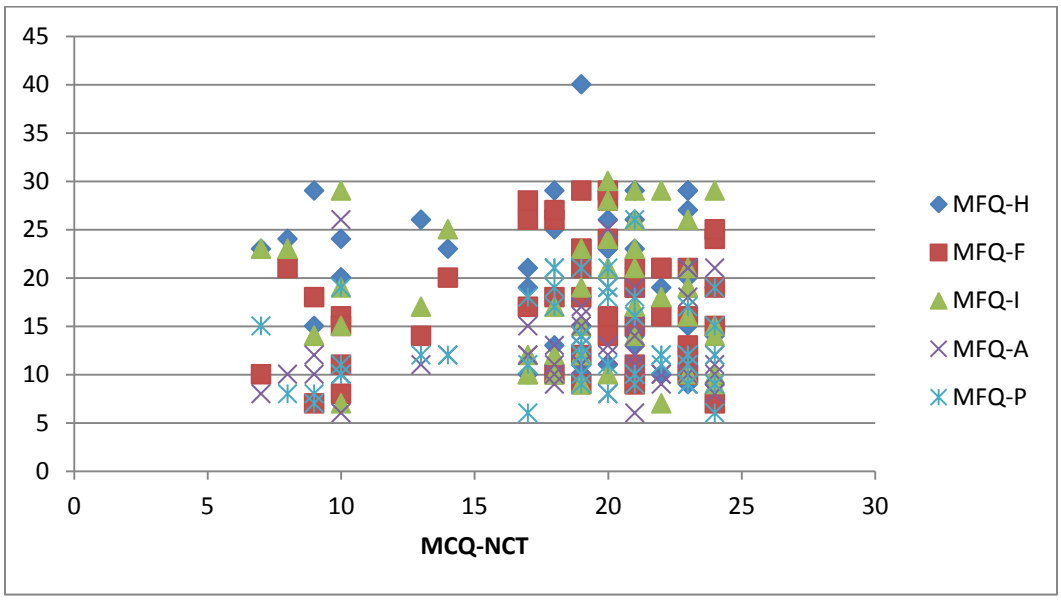


Table 21: shows correlation between Mature defense style in defense style questionnaire and subscales of Moral Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
DM-MATURE	Correlation Coefficient	0.274	0.096	0.097	0.148	-0.210
	p-value	0.050	NS (0.05)	NS (0.05)	NS (0.05)	NS (0.05)
	N	50	50	50	50	50

[MFQ-H Moral foundation questionnaire- harm; MFQ-H: Moral foundation questionnaire- harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P: Moral foundation questionnaire-Purity; DM-IMMATURE: Defense mechanism- immature]

Figure 21: shows correlation between mature defense style in defense style questionnaire and subscales of Moral Foundation questionnaire in study group.

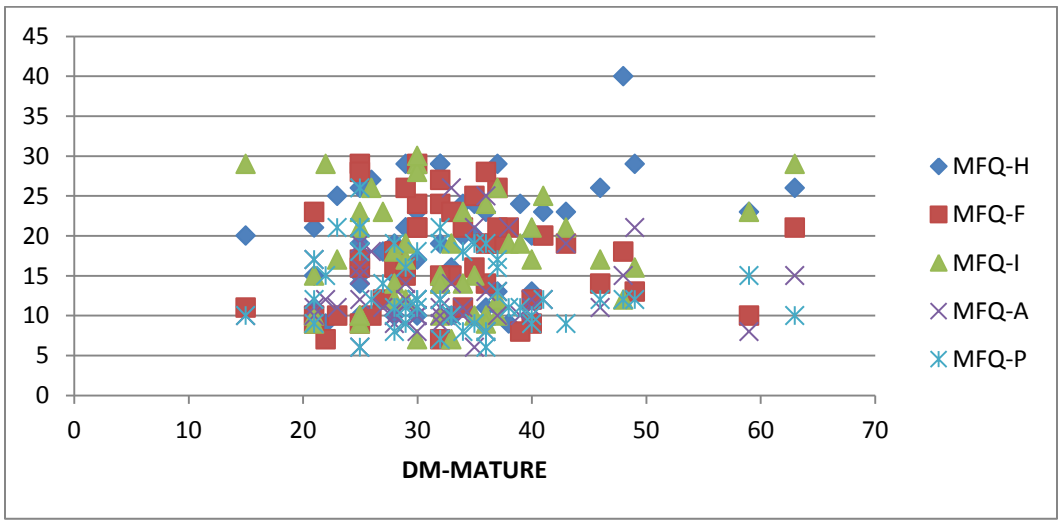


Table 22: shows correlation between Immature defense style in defense style questionnaire and subscales of Moral Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
DM IMMATURE	Correlation Coefficient	-0.020	-0.142	-0.085	0.306	0.133
	p-value	NS (0.05)	NS (0.05)	NS (0.05)	0.031	NS (0.05)
	N	50	50	50	50	50

[DM-IMMATURE Defense mechanism- immature**;** MFQ-H Moral foundation questionnaire- harm; MFQ-H: Moral foundation questionnaire-harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P: Moral foundation questionnaire-Purity]

Figure 22: shows correlation between immature defense style in defense style questionnaire and subscales of Moral Foundation questionnaire in study group.

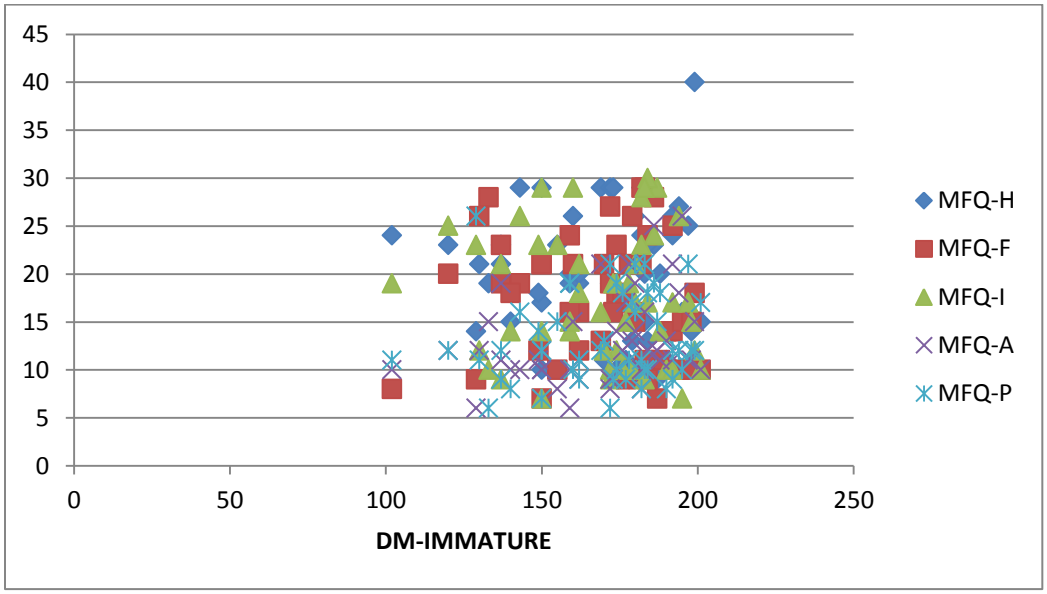
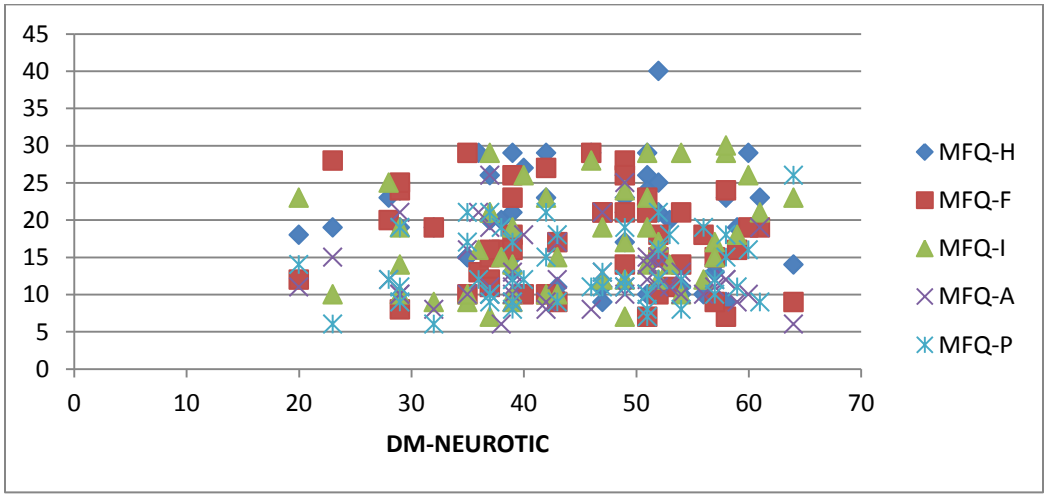


Table 23: shows correlation between Neurotic defense style in defense style questionnaire and subscales of Moral Foundation questionnaire in study group.

	Spearman's rho	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
DM NEUROTIC	Correlation Coefficient	-0.117	-0.137	0.289	-0.063	0.107
	p-value	NS (0.05)	NS (0.05)	**0.042**	NS (0.05)	NS (0.05)
	N	50	50	50	50	50

[DM-NEUROTIC: Defense mechanism-neurotic; MFQ-H Moral foundation questionnaire- harm; MFQ-H: Moral foundation questionnaire-harm; MFQ-F: Moral foundation questionnaire-fairness; MFQ-I: Moral foundation questionnaire-Ingroup; MFQ-A: Moral foundation questionnaire-Authority; MFQ-P: Moral foundation questionnaire-Purity]

Figure 23: shows correlation between Neurotic defense style in defense style questionnaire and subscales of Moral Foundation questionnaire in study group.



RESULTS

The current study was conducted in department of psychiatry (in-patient and out-patient) of Dayanand Medical College and hospital, Ludhiana on subjects diagnosed with opioid use disorder (N=50) and healthy control group (N=50). The study aimed to study the metacognition, defense style and moral decision making in people diagnosed with opioid use disorder. The purposive sampling technique was chosen to select the participants. A written consent was duly signed from all the participants followed by the socio-demographic proforma, MCQ-30, DSQ-30 AND Moral Foundation Questionnaire.

In Table 1- we have tabulated the mean difference participants in study group and control group on the basis of age. The Z-value is -1.387 and corresponding p- value is not significant. (p-value>0.001)

In Table 2, we have tabulated the distribution of different qualification between study group and control group. In study group , 32% participants were graduate, 28% subjects were 12^{th} passed , 26% people were 10^{th} passed, 8% were educated up to matric and 6% were post graduate.

In Table 3, we have tabulated the distribution on the basis of occupation of participants in study group and control group. The table shows that among the subjects in study group, 52% were farmer/clerical/shopkeeper, 24% were semi-skilled/skilled worker, 16% were unemployed, and 2% were clerical/shop owner / Farm.

In Table 4, we have tabulated the distribution on the basis of socio-economic status of participants in study group and control group. 64% of subjects in study group were belonging to upper middle SES, 34% belongs to lower middle SES and 2% belonged to Upper Lower. And in control group distribution was as such, 90% participant belonged to upper middle, and remaining 10% belonged to lower middle SES.

In Table 5, we have tabulated the mean difference between study group and control group on all five subscales of Metacognitive Questionnaire. The Z value of MCQ-CC was -6.173, of MCQ-PBW was -4.871, of MCQ-CSC was -4.242, of MCQ-UD was -6.138 and of MCQ-NCT was -3.600. All the subscales were significant on p-value of 0.001.

In Table 6, we have tabulated the mean difference between study group and control group on three subscales of Defense Style Questionnaire. The Z value of DM-mature was -5.940, of DM-neurotic was -0.824 and of DM-immature was -7.698. The p-value of DM-mature and DM-immature was significant at 0.001 level but the p-value of DM-neurotic was not less than or equal to 0.001, hence not significant.

In Table 7, we have tabulated mean difference between study group and control group on five subscales of Moral Foundation Questionnaire. The Z-value of MFQ-H was -2.129, MFQ-F was -2.867, MFQ-I was -1.526, MFQ-A was -7.040, and MFQ-P was -6.380. The p-value of MFQ-P and MFQ-A was significant at 0.001 level, of MFQ-F and MFQ-H was significant (p-value<0.05), but the P-value of MFQ-I was not significant (p-value >0.05)

In Table 8, we have tabulated the correlation between age and five subscales of Metacognition questionnaire. The r- coefficient of age with MCQ-CC, MCQ-PBW, MCQ-CSC, MCQ-US and MCQ-NCT was -0.051, 0.161,-0.052, 0.184 and -0.147respectively. None of which is significant for p<0.001.

In Table 9, we have tabulated correlation between age and subscales of Defense Style questionnaire. Table shows that r coefficient of age with DM-mature was 0.286, with p-value of 0.044, which is significant. Correlation coefficient of age with DM-neurotic was -0.029 with p-value of 0.839, not significant and with DM-immature was 0.126 with p-value of 0.382 hence not significant.

In Table 10, we have tabulated correlation between age and subscale of Moral Foundation Questionnaire. R coefficient of age with MFQ-H was 0.075 with p-value of 0.606 hence not significant, with MFQ-F was 0.151 and p-value of 0.294 hence not significant, with MFQ-I was -0.112 and p-value of 0.134 hence not significant, with FQ-A was 0.215 and p-value was 0.134 hence not significant and with MFQ-P was -0.282 and p-value of 0.048 , hence significant.

In Table 11, we tabulated correlation between MCQ-CC with subscales of defense style questionnaire. R cofficiant of MCQ-CC with DM-mature, DM-neurotic and DM-immature was -0.136, -0.44 AND 0.122 respectively. The respective p-values of MCQ-CC with DM-mature, DM-neurotic and DM-immature were 0.348, 0.760 and 0.400 respectively .the correlation is not significant in any of the three cases.

In Table12, we have tabulated correlation between MCQ-CC and scales of Moral Foundation Questionnaire. The R coefficient between MCQ-CC with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was -0.014, -0.077, 0.117, -0.076, 0.294 respectively. The p-value of MCQ-CC with MFQ-P is 0.039 which is significant.

In Table 13, we have tabulated correlation between MCQ-PBW with subscales of Defense style questionnaire. R coefficient between MCQ-PBW with DM-mature, DM-neurotic and DM-immature is 0.201, 0.029, and 0.139 respectively. All the three were not significant according to p-values which were 0.162, 0.840 and 0.347 for DM-mature, DM-neurotic and DM-immature respectively.

In Table 14, we have computed correlation between MCQ-PBW with subscales of Moral foundation questionnaire. The r coefficient of MCQ-PBW with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was 0045, 0.075, 0.213, 0.009, 0.105 respectively. None of which are significant.

In Table 15, we computed, correlation between MCQ-CSC with subscales of defense style questionnaire. The r coefficient between MCQ-CSC with DM-mature, DM-neurotic and DM-immature was 0.114, -0.042, -0.068 respectively. None of which are significant.

In Table 16, we computed, correlation between MCQ-CSC with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was -0.155, -0.052, 0.219, 0.023 and 0.008 respectively. None of which are significant for p-value > 0.05.

In Table 17, we computed, correlation between MCQ-UD with subscales of Defense Style Questionnaire. The r coefficient of MCQ-UD with DM-mature, DM-neurotic and DM-immature was 0.416, -0.168, -0.116. p-value of MCQ-UD with DM-Mature was 0.003 which is significant. Other two were not significant.

In Table 18, we computed correlation between MCQ-UD with subscales of Moral Foundation Questionnaire. The r coefficient between MCQ-UD with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was 0.276, 0.164, 0.083, 0.008 and -0.156 respectively. None of which were significant.

In Table 19, we computed the correlation between MCQ-NCT with subscales of Defense Style Questionnaire. The r coefficient of MCQ-NCT with DM-mature, DM-neurotic and DM-immature was 0.004, 0.148, 0.210 respectively. None of which are significant.

In Table 20, we computed, the correlation between MCQ-NCT with subscales of Moral Foundation Questionnaire. The r coefficient of MCQ-NCT with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was -0.111, -0.003, 0.092, 0.089 and 0.023 respectively. None of which are significant.

In Table 21, we tabulated correlation between DM-Mature with subscales of oral Foundation Questionnaire. The r coefficient of DM-Mature with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was 0.274, 0.096, 0.097, 0.148, -0.210 respectively. None of which are significant.

In Table 22, we tabulated the correlation between DM-Immature with subscales of Moral Foundation Questionnaire. The r coefficient with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was -0.020, -0.142, -0.085, 0.306 and 0.133. The p-value of correlation between DM-immature with MFQ-A was significant. P-values for other correlation is not significant.

In Table-23, we computed, the correlation between DM-neurotic with subscales of Moral Foundation Questionnaire. The r coefficient of DM-neurotic with MFQ-H, MFQ-F, MFQ-I, MFQ-A and MFQ-P was -0.117, -0.137, 0.289, -0.063, 0.107 respectively. The p-value of DM-neurotic with MFQ-I was significant. No p-value for other subscales is significant.

DISCUSSION

The present study was conducted with an aim to explore the relationship between metacognition, defense style and moral decision making in patent with opioid use disorder. The study was conducted on 100 subjects, 50 in study group and 50 in study group. The males, for study group, from in-patient and out-patients of Dayanand Medical College and Hospital were interviewed. The control group was from general population.

SOCIO-DEMOGRAPHIC VARIABLES

AGE

With regards to age, mean age of study group is 36 years which shows that most people in study group were around this age. Studies done by Naji et al,.[87] and Kelly et al,.[93] informs that older people are more prone to have opioid use disorder.

EDUCATION

The distribution of qualification in study group was 32% participants were graduate, 28% subjects were 12^{th} passed , 26% people were 10^{th} passed, 8% were educated up to matric and 6% were post graduate. And the distribution in control group was 40% of participants were Graduate, 30% 12^{th} pass, 24% Post Graduate and 6% 10^{th} pass. The chi-square coefficient was 16.129 and respective p-value is 0.003. The mean difference between age of study group and control group is significant, which indicates that education level in both the groups is significantly different The study on Impact of Opioid use disorder on levels of education attainment conducted by ellis et al,.[90] in 2019 supports our findings as according to the study, those who develop opioid use disorder attain lower levels of education than the general population as a whole.

OCCUPATION

The distribution in the study group is such that 52% participants are farmer/clerical/shopkeeper. 24% are semi-skilled workers, 16% are unemployed and 4% are professional. The table shows that majority of

people were either farmer, does clerical job or are shopkeepers. One factor that explains this is majority of the population in Punjab state is agrarian. Another factor could be high physical job demand, which is needed in farming and other semi-skilled works. A study done by choi et al,.[92] in 2020 showed similar results.

SOCIO-ECONOMIC STATUS

The distribution shows, 64% of subjects in study group were belonging to upper middle SES, 34% belongs to lower middle SES and 2% belonged to Upper Lower. And in control group distribution was as such, 90% participant belonged to upper middle, and remaining 10% belonged to lower middle SES. Other studies done on the socio-economic status contradict our findings. Studies by Kelly et al,.[93] and svendsen et al,.[94] indicated that lower socio-economic status is linked with opioid use which is not true for our study.

METACOGNITION

A significant difference is observed between the means of study group and control group on metacognitive questionnaire. The Z value of MCQ-CC was -6.173, of MCQ-PBW was -4.871, of MCQ-CSC was -4.242, of MCQ-UD was -6.138 and of MCQ-NCT was -3.600. All the subscales were significant on p-value of 0.001, which indicates that there is a significant difference between the means of both groups, study and control, mean of MCQ-CC, MCQ-UD and MCQ-NCT is higher in study group and mean of MCQ-PBW and MCQ-CSC is higher in control group. This reflects that cognitive confidence; uncontrollability & danger and need to control thoughts is higher in study group. Our results are in concordance with a cross sectional study done by Hüseyin ÜNÜBOL et al [99] where they found uncontrollability and danger, cognitive self-consciousness, and the need to control thoughts were higher in the substance dependent group compared to the control group.

DEFENSE STYLE

A significant mean difference is observed between study and control group on mature and immature defense styles but mean difference is not significant for neurotic defense styles. The Z value of DM-mature was -5.940, of DM-neurotic was -0.824 and of DM-immature was -7.698. The mean of mature defense style in control group is higher than in study group and mean of immature defense style in higher in study group. In a study by D. Raketic et al,.[101] significant differences were found in neurotic and immature defense mechanism use: alcohol addicts use prevalently neurotic mechanisms and immature mechanisms prevail among opiate addicts.

Moral Decision Making

The p-value of MFQ-P and MFQ-A was significant at 0.01 level, of MFQ-F and MFQ-H was significant (p-value<0.05), but the P-value of MFQ-I was not significant (p-value >0.05). The mean of subscale of harm, fairness, authority and purity were lower in study group which indicates that moral decision making is lowered in patients with opioid use disorder. No research has been done on people with opioid use disorder with moral foundation questionnaire.

AGE AND METACOGNITION

The correlation between the age and subscales of metacognition was not significant. No other study has been done on opioid population exploring the relationship.

AGE AND DEFENSE STYLES

The correlation between the age and subscales of Defense styles was not significant. No other study has been done on opioid population exploring the relationship.

AGE AND MORAL DECISION MAKING

There is a negative correlation between age and Purity in moral foundation questionnaire, which indicates that as the factor of age increase MFQ-P decreases and vice versa. No significant correlation has been found with other subscales of moral foundation questionnaire. No other research has been done to find out the relationship between age and moral decision making in opioid Patients.

COGNITIVE CONFIDENCE –METACOGNITION QUESTIONNAIRE AND DEFENSE STYLE

No significant relationship has been found between MCQ-CC and subscales of defense style questionnaire. No other research has been conducted to establish the relationship between the two.

COGNITIVE CONFIDENCE –METACOGNITION QUESTIONNAIRE AND MORAL DECISION MAKING

There is a positive relationship between MCQ-CC and MFQ-P, which indicates that as cognitive confidence increases, Purity in moral foundation questionnaire also increases. No significant relationship has been found between MCQ-CC and other subscales of Moral foundation questionnaire. No other research has been conducted to establish the relationship between the two.

POSITIVE BELIEFS ABOUT WORRY METACOGNITION AND DEFENSE STYLE

No significant relationship has been found between MCQ-PBW and subscales of defense style questionnaire. No other research has been conducted to establish the relationship between the two.

POSITIVE BELIEFS ABOUT WORRY METACOGNITION AND MORAL DECISION MAKING:

No significant relationship has been found between MCQ-PBW and subscales of moral decision making. No other research has been conducted to establish the relationship between the two.

COGNITIVE SELF-CONSCIOUSNESS METACOGNITION AND DEFENSE STYLE

No significant relationship has been found between MCQ-CSC and subscales of defense style questionnaire. No other research has been conducted to establish the relationship between the two.

COGNITIVE SELF-CONSCIOUSNESS METACOGNITION AND MORAL DECISION MAKING

No significant relationship has been found between MCQ-CSC and subscales of Moral decision making. No other research has been conducted to establish the relationship between the two.

UNCONTROLLABILITY AND DANGER METACOGNITION AND DEFENSE STYLES

There is a positive correlation (r- 0.416) between metacognition related to uncontrollability and danger with mature defense style, indicating as metacognition about uncontrollability and danger will increase mature defense mechanism will also be used more or vice versa. Correlation of uncontrollability and danger with immature and neurotic defense styles is not significant. No other research has been conducted to establish the relationship between the two.

UNCONTROLLABILITY AND DANGER METACOGNITION AND MORAL DECISION MAKING

There is a positive correlation observed between uncontrollability and danger and harm related moral decision (r-0.276). This tells that as metacognition about uncontrollability and danger will increase harm will become an important factor in moral decision making or vice versa. No

other research has been conducted to establish the relationship between the two.

NEED TO CONTROL THOUGHTS AND DEFENSE STYLE

No significant relationship has been found between MCQ-NCT and subscales of defense style questionnaire. No other research has been conducted to establish the relationship between the two.

NEED TO CONTROL THOUGHTS AND MORAL DECISION MAKING

No significant relationship has been found between MCQ-NCT and subscales of moral foundation questionnaire. No other research has been conducted to establish the relationship between the two.

MATURE DEFENSE STYLE AND MORAL DECISION MAKING

A positive correlation has been observed between mature defense style and harm related moral decision making (r-0.274). This indicates that the more a person will use mature defense style the more his moral decisions will be based on harm aspect or vice versa. No significant relationship is found between mature defense style and other subscales of moral foundation questionnaire. No research has been done to establish the relationship between the two.

IMMATURE DEFENSE STYLE AND MORAL DECISION MAKING

A positive correlation was found between immature defense style and authority related moral decision making. This relationship indicates that the more a person will use immature defenses the more his moral decisions will be based on authority or vice versa. No significant correlation was found between immature defense style and other scales of moral foundation questionnaire. No research has been done to establish the relationship between the two.

NEUROTIC DEFENSE STYLE AND MORAL DECISION MAKING

A positive correlation has been found between neurotic defense style and moral decisions based on in-group. This relationship indicates that the more a person will use neurotic defense style the more his moral decisions will be based on in-group factor and vice versa. No significant relationship was observed between neurotic defense style and other subscales of moral foundation questionnaire.

LIMITATIONS

1. The study was based in hospital settings hence cannot be generalized to entire population of people with opioid use disorder.
2. Sample size was small and was not a proper representation of whole population.
3. Statistical techniques used for correlation was non-parametric.

SUMMARY AND CONCLUSION

The present study was conducted with an aim to explore the relationship between metacognition, defense style and moral decision making in patent with opioid use disorder. The study was conducted on 100 subjects, 50 in study group and 50 in study group. The males, for study group, from in-patient and out-patients of Dayanand Medical College and Hospital were interviewed. The control group was from general population. Patients were assessed on Metacognition questionnaire- 30, defense style questionnaire-30 and moral foundation questionnaire-20. Then the distribution of demographic factors were evaluated and all the three factors were compared in study and control group. Correlation between the factors were also accessed using appropriate statistical tests. The following conclusions were reached-

- All the participants were male.
- Mean age of the study group was 36 years and mean age of control group is 33 years.
- Among the study group 32% patients were graduate, 28% were 12^{th} pass, 10^{th} pass were 26% , 8% patients were educated up to metric and 6% were post graduate.
- Majority of the participants were farmer/clerical / shopkeeper (52%) and semi-skilled workers (24%) in study group.
- Majority of the participants were belonging to upper middle status (64%) and lower middle status (34%).
- Mean difference was significant for all the subscale of metacognition questionnaire between study group and control group. Cognitive confidence, uncontrollability & danger and need to control thoughts being higher in study group. Cognitive self-consciousness and positive beliefs about worry being higher in control group.
- Mean difference was significant for mature and immature subscale of defense style questionnaire between study group and control group.

Mature defense style lower in study group and immature defense style higher in study group, indicating patients with opioid use disorder use immature defense style more than mature. Mean difference was not significant between neurotic defense styles of both the groups.

- Mean difference was significant for harm, fairness, authority and purity of moral decision making. Mean difference between In-group based moral decisions was not significant.
- Correlation between age and metacognition, defense style and moral decision making was not significant. Hence no relationship found.

On the basis of above mentioned points we conclude that we have successfully studied metacognition, defense style and moral decision making in patients with opioid use disorder and control group. Instruments used were MCQ-30, MFQ-20 and DSQ-40.

Our results reveal the metacognition, defense style and moral decision making has their individual impact on the though process of patients with opioid use disorder. Which further can be targeted during interventions?

IMPLICATIONS:

Metacognition has essential role in our lives as they have an important impact on the way we perceive our surroundings and events along with the meanings associated with the perceived information. Our interpretation of situations is affected by our ability to regulate the thoughts. The inability to manage and control thoughts adequately is the root cause of various physical and psychological problems. Same goes with the defenses we use. The understanding of the impact that these three factors play in opioid use behavior and their inter relationship will enhance our techniques to intervene.

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KEY TO MASTER CHART

S.NO	Serial Number
SES	Socio-Economic Status
M	Male
MCQ-CC	Metacognition questionnaire – cognitive confidence
MCQ-PBW	Metacognition questionnaire- positive beliefs about worry
MCQ-CSC	Metacognition questionnaire- cognitive self-consciousness
MCQ-UD	Metacognition questionnaire-uncontrollability and danger
MCQ- NCT	Metacognition questionnaire-Need to control thoughts
DSQ	Defense Style Questionnaire
DM- MATURE	Defense mechanism- mature
DM-IMMATURE	Defense mechanism-immature
DM-NEUROTIC	Defense mechanism-neurotic
MDM	Moral Decision Making
MFQ-H	Moral foundation questionnaire- harm
MFQ-F	Moral foundation questionnaire-fairness
MFQ-I	Moral foundation questionnaire-Ingroup
MFQ-A	Moral foundation questionnaire-Authority
MFQ-P	Moral foundation questionnaire-Purity

STUDY GROUP																				
S.NO	NAME	MRD NO.	AGE (YRS)	SEX	EDUCATION.	OCCUPATION	SES	MCQ-CC	MCQ-PBW	MCQ-CSC	MCQ-UD	MCQ-NCT	DM-MATURE	DM NEUROTIC	DM IMMATURE	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
1	JS	1205332	22	M	UP TO MATRIC	SEMI SKILLED WORKER	UPPER MIDDLE	10	6	19	17	22	30	54	150	10	21	29	10	12
2	GS	477773	68	M	UP TO MATRIC	CLERICAL,SHOP OWNER/FARM	UPPER MIDDLE	17	9	10	12	21	43	61	137	23	19	21	19	9
3	GS	1008426	50	M	UP TO MATRIC	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	20	11	6	13	20	36	54	190	11	14	10	13	8
4	KS	1206375	26	M	GRADUATE	UNEMPLOYED	UPPER MIDDLE	19	17	7	19	22	28	59	162	19	16	18	9	11
5	AS	375856	61	M	10TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	6	18	19	21	23	49	36	169	29	13	16	21	12
6	AS	1206449	30	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	LOWER MIDDLE	22	7	17	20	24	32	29	159	19	24	14	10	19
7	P	1206554	30	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	19	10	12	19	19	25	35	183	15	29	9	16	21
8	IS	1202805	60	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	23	21	18	24	18	37	39	179	13	26	10	13	17
9	NS	188951	30	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	22	21	19	22	7	59	42	155	23	10	23	8	15
10	VB	1208761	54	M	10TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	15	17	13	26	13	46	49	192	26	14	17	11	12
11	LS	1080813	28	M	POST GRADUATE	UNEMPLOYED	UPPER MIDDLE	17	24	16	19	10	35	38	159	20	16	15	6	19
12	GS	1133186	33	M	GRADUATE	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	19	8	17	18	22	30	49	150	17	21	7	10	12
13	JS	1210744	50	M	GRADUATE	SEMI-SKILLED/SKILLED WORKER	UPPER MIDDLE	24	10	14	23	19	21	43	177	11	9	15	17	9
14	S	966564	31	M	10TH	SEMI-SKILLED/SKILLED WORKER	UPPER LOWER	20	15	16	21	24	22	58	187	9	7	29	12	15
15	SB	1211627	34	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	18	13	10	20	21	37	60	143	29	19	26	10	16
16	JS	1143331	45	M	POST GRADUATE	PROFESSIONAL	UPPER MIDDLE	6	12	21	18	21	40	57	184	13	9	17	12	10
17	MK	145631	35	M	10TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	7	11	9	21	19	48	52	199	40	18	12	15	12
18	AS	1211325	45	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	24	19	7	21	18	32	42	172	29	27	10	9	21
19	SS	1216425	50	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	21	16	6	22	20	36	49	186	23	28	24	25	19
20	KS	906948	33	M	POST GRADUATE	PROFESSIONAL	UPPER MIDDLE	20	20	23	17	23	38	47	178	9	21	19	21	11
21	S	45590	57	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	19	18	9	19	9	28	39	140	15	18	14	10	8
22	JS	1189639	32	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	17	15	17	20	17	25	23	133	19	28	10	15	6
23	GS	1202684	54	M	10TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	19	11	17	21	14	41	28	120	23	20	25	12	12
24	MP	1218051	34	M	12TH	SEMI-SKILLED/SKILLED WORKER	UPPER MIDDLE	19	19	14	22	20	30	46	182	29	29	28	8	11
25	SS	1218069	27	M	GRADUATE	UNEMPLOYED	UPPER MIDDLE	22	15	19	23	21	63	51	160	26	21	29	15	10
26	JS	554530	30	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	24	14	15	17	20	30	58	184	23	24	30	12	18
27	BS	870029	30	M	10TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	19	10	13	19	19	21	39	137	21	23	9	11	12
28	SS	343310	28	M	12TH	UNEMPLOYED	LOWER MIDDLE	18	17	12	7	18	28	56	174	10	18	12	10	19
29	RS	624457	33	M	UP TO MATRIC	FARMER/CLERICAL/SHOPKEEPER	LOWER MIDDLE	15	12	10	10	10	33	37	195	16	15	7	26	10
30	P	1072143	22	M	12TH	UNEMPLOYED	UPPER MIDDLE	20	10	17	19	21	25	64	129	14	9	23	6	26
31	P	789991	24	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	23	21	18	16	20	25	37	180	26	16	21	19	21
32	LS	1231177	25	M	12TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	20	8	18	13	23	21	35	201	15	10	10	10	17
33	L	1218520	34	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	20	20	22	19	24	32	57	198	14	15	15	11	12
34	IS	68982	35	M	12TH	FARMER/CLERICAL/SHOPKEEPER	LOWER MIDDLE	19	17	16	21	19	33	51	174	10	23	19	14	10
35	S	1225004	32	M	10TH	FARMER/CLERICAL/SHOPKEEPER	LOWER MIDDLE	7	11	18	22	17	29	49	130	21	26	12	12	11
36	S	1154023	28	M	GRADUATE	UNEMPLOYED	UPPER MIDDLE	22	15	13	23	23	40	37	162	20	12	21	11	9
37	IS	1229272	52	M	10TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	22	14	15	24	24	36	32	172	19	19	9	8	6
38	BS	1146801	26	M	12TH	FARMER/CLERICAL/SHOPKEEPER	LOWER MIDDLE	23	10	17	22	10	39	29	102	24	8	19	10	11
39	R	1203761	19	M	10TH	UNEMPLOYED	UPPER MIDDLE	21	11	8	20	21	34	53	188	20	11	14	11	18
40	G	670892	28	M	10TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	10	6	9	21	24	35	29	192	24	25	10	21	9
41	MS	1220348	28	M	12TH	UNEMPLOYED	UPPER MIDDLE	17	9	11	19	9	32	51	150	29	7	14	12	7
42	GS	525434	26	M	12TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	14	11	7	17	19	27	20	149	18	12	23	11	14
43	HS	893121	35	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	19	15	16	13	10	15	37	183	20	11	29	10	10
44	VS	1148268	41	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	22	19	19	20	23	26	40	194	27	10	26	18	12
45	RS	1214852	25	M	10TH	FARMER/CLERICAL/SHOPKEEPER	LOWER MIDDLE	23	17	17	22	21	29	52	180	21	15	17	14	16
46	SPS	1163548	48	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	20	14	21	21	19	37	47	170	11	21	12	13	13
47	VS	1146057	35	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	21	10	10	17	17	25	43	176	10	17	10	12	18
48	TS	20513	45	M	10TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	22	9	14	10	18	23	52	197	25	10	17	11	21
49	RS	1200743	43	M	12TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	20	7	12	19	23	29	39	173	29	16	19	9	9
50	TS	1214353	36	M	10TH	FARMER/CLERICAL/SHOPKEEPER	LOWER MIDDLE	19	16	21	21	8	34	51	182	24	21	23	10	8

CONTROL GROUP																			
SNO	NAME	AGE	SEX	EDUCATION	OCCUPATION	SES	MCQ-CC	MCQ-PBW	MCQ-CSC	MCQ-UD	MCQ-NCT	DM-MATURE	DM NEUROTIC	DM IMMATURE	MFQ-H	MFQ-F	MFQ-I	MFQ-A	MFQ-P
1	S	52	M	POSTGRADUATE	PROFESSIONAL	UPPER MIDDLE	6	23	21	9	18	36	33	99	23	23	17	17	10
2	J	54	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	11	21	19	10	10	24	32	104	24	28	14	19	13
3	P	19	M	10TH	STUDENT	UPPER MIDDLE	10	17	17	12	11	45	46	127	28	21	18	14	19
4	A	50	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	7	14	18	14	12	56	54	143	29	19	19	24	21
5	RS	41	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	10	9	12	8	19	42	49	158	25	12	13	28	27
6	S	24	M	GRADUATE	PROFESSIONAL	UPPER MIDDLE	8	12	21	15	21	27	38	129	10	15	1	26	25
7	J	49	M	10TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	12	15	24	17	20	32	65	142	19	10	21	24	26
8	S	56	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	19	24	10	19	24	39	59	134	18	16	26	20	20
9	R	24	M	12TH	SEMI-SKILLED/SKILLED WORKER	UPPER MIDDLE	6	19	22	15	22	42	48	129	25	19	26	24	14
10	A	49	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	15	15	12	10	19	49	38	150	23	27	13	21	18
11	RS	45	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	20	21	10	6	17	46	54	127	29	29	9	27	19
12	S	35	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	12	23	21	17	11	37	49	122	27	25	15	24	24
13	R	23	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	14	22	24	21	12	31	57	135	19	23	10	22	22
14	A	27	M	GRADUATE	UNEMPLOYED	UPPER MIDDLE	10	19	22	18	10	56	65	119	21	20	14	28	12
15	S	21	M	12TH	STUDENT	UPPER MIDDLE	11	19	10	13	16	56	42	132	26	24	25	21	18
16	M	30	M	POSTGRADUATE	SEMI-SKILLED/SKILLED WORKER	UPPER MIDDLE	6	16	17	12	18	51	62	100	28	21	26	28	21
17	S	56	M	POSTGRADUATE	PROFESSIONAL	UPPER MIDDLE	6	9	19	10	9	67	39	90	23	16	24	25	9
18	AK	26	M	POSTGRADUATE	PROFESSIONAL	UPPER MIDDLE	6	21	13	11	7	61	35	103	17	17	29	20	28
19	RK	25	M	GRADUATE	PROFESSIONAL	UPPER MIDDLE	6	24	14	9	19	51	42	82	13	18	21	22	26
20	AC	30	M	POSTGRADUATE	UNEMPLOYED	UPPER MIDDLE	13	21	21	14	13	59	33	132	21	14	22	27	23
21	A	19	M	12TH	STUDENT	UPPER MIDDLE	12	20	23	17	6	43	62	120	25	21	13	18	20
22	V	21	M	12TH	STUDENT	UPPER MIDDLE	7	21	17	12	11	49	32	109	27	24	17	27	21
23	V	26	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	8	18	19	11	10	34	38	72	20	26	14	18	20
24	K	52	M	10TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	10	23	20	10	15	44	61	88	26	20	19	30	20
25	J	32	M	12TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	9	21	21	8	21	65	32	130	27	27	15	16	21
26	A	39	M	POSTGRADUATE	PROFESSIONAL	UPPER MIDDLE	10	17	22	16	22	49	48	111	22	21	28	15	22
27	R	45	M	12TH	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	13	12	24	18	10	44	54	100	28	27	20	18	28
28	A	34	M	POSTGRADUATE	PROFESSIONAL	UPPER MIDDLE	6	21	20	13	9	36	50	49	29	21	22	14	26
29	A	32	M	POSTGRADUATE	PROFESSIONAL	UPPER MIDDLE	7	24	21	23	14	58	24	132	30	27	26	19	24
30	A	27	M	GRADUATE	PROFESSIONAL	UPPER MIDDLE	23	21	19	19	17	53	38	91	23	29	24	27	22
31	R	35	M	12TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	14	22	19	16	12	48	54	100	25	27	15	21	29
32	CS	27	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	19	19	12	7	19	49	48	103	27	20	17	24	20
33	S	20	M	12TH	STUDENT	UPPER MIDDLE	14	14	21	6	12	38	41	144	13	27	12	16	25
34	R	29	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	13	23	20	6	8	39	38	102	17	24	9	29	21
35	S	21	M	12TH	UNEMPLOYED	UPPER MIDDLE	9	20	22	11	10	56	54	117	10	12	21	23	29
36	S	27	M	POSTGRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	14	17	23	13	15	51	30	119	16	18	22	14	19
37	M	19	M	12TH	STUDENT	UPPER MIDDLE	13	15	19	10	18	48	25	89	8	9	27	17	18
38	A	31	M	GRADUATE	PROFESSIONAL	UPPER MIDDLE	14	19	10	12	9	46	27	69	19	25	21	19	16
39	A	34	M	GRADUATE	PROFESSIONAL	UPPER MIDDLE	10	20	11	17	13	37	10	139	23	29	28	25	12
40	B	45	M	12TH	SEMI-SKILLED/SKILLED WORKER	LOWER MIDDLE	7	21	21	11	18	47	41	120	23	21	25	26	29
41	A	29	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	10	22	22	21	21	42	31	77	22	22	29	23	26
42	D	34	M	POSTGRADUATE	UNEMPLOYED	UPPER MIDDLE	16	17	20	19	19	37	20	143	29	19	26	28	27
43	H	37	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	13	14	19	16	21	54	31	121	10	16	9	20	21
44	J	33	M	POSTGRADUATE	PROFESSIONAL	UPPER MIDDLE	15	10	17	7	18	63	26	89	21	10	21	21	20
45	K	30	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	9	21	17	11	8	47	53	73	15	26	28	26	23
46	M	19	M	12TH	STUDENT	UPPER MIDDLE	12	23	19	9	14	34	33	133	24	27	22	25	18
47	M	29	M	POSTGRADUATE	UNEMPLOYED	UPPER MIDDLE	6	11	20	6	17	54	38	126	29	21	24	21	14
48	P	35	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	21	23	21	8	23	56	45	93	27	22	21	20	20
49	R	49	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	12	21	17	14	17	43	52	149	25	27	8	22	28
50	S	28	M	GRADUATE	FARMER/CLERICAL/SHOPKEEPER	UPPER MIDDLE	8	12	10	9	19	37	54	111	29	9	17	10	25

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5/1/22

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No. BFUHS/2K21p-TH/ 17

Date 4/1/22

The Principal,
DMC, Ludhiana.

Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 29.10.2021 has approved the plan of thesis of **Vaishnavi Dang**, a student of your college for **M.Phil. (Clinical Psychology)** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
To study metacognition, defense styles and moral decision making in individual with and without opioid use disorder.

Supervisor
Dr. Bholeshwar Prasad Mishra
Prof. & Head,
Dept. of Clinical Psychology,
DMCH, Ludhiana.

Co-Supervisor

Dr. Pankaj Kumar
Assoc. Prof.,
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Asst. Prof.,
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The student has to submit the four copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

197. If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.

198. The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.

TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUALS WITH AND WITHOUT OPIOID USE DISORDER

DISSERTATION PROPOSAL

FOR APPROVAL OF SUBJECT OF DISSERTATION TO BE

SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

M. PHIL.

in

CLINICAL PSYCHOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

(July, 2021)

VAISHNAVI DANG
M.Phil. Clinical Psychology Student

Department of CLINICAL PSYCHOLOGY
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA

ABSTRACT OF PLAN OF DISSERTATION

Title	TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUAL WITH AND WITHOUT OPIOID USE DISORDER
For the degree of	M. Phil Clinical Psychology
Name of the candidate	MS. VAISHNAVI DANG
Supervisor	Dr. Bholeshwar Prasad Mishra, Professor & Head, Department of Clinical Psychology, DMCH, Ludhiana
Co-supervisor	Dr. Pankaj Kumar, Professor, Department of Psychiatry, DMCH, Ludhiana Palak Upadhyay, Assistant Professor, Department of Clinical Psychology, DMCH, Ludhiana
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Substance abuse is a common problem among young adults and it has devastating affects both on the individual. Opioid addiction is a long-lasting (chronic) disease that can cause major health, social, and economic problems. Opioids are a class of drugs that act in the nervous system to produce feelings of pleasure and pain relief. Some opioids are legally prescribed by healthcare providers to manage severe and chronic pain. Opioid addiction is characterized by a powerful, compulsive urge to use opioid drugs, even when they are no longer required medically. These individuals have issues with their metacognition. They also might use immature defense style to cope up with reality. Their moral decision making could also be affected.

Aim of Study: To evaluate metacognition in patients with a diagnosis of Opioid use disorder. 2) To evaluate type of defense styles used by patients with a diagnosis of Opioid use disorder. 3) To evaluate moral decision making in patients with a diagnosis of Opioid use disorder. 4) To find the relationship among metacognition, defense style and moral decision making in patients with a diagnosis of Opioid use disorder. 5) To compare metacognition, defense style and moral decision making in patients with a diagnosis of Opioid use disorder.

Materials & methods: The study will be conducted on patients(N=50) of Opioid Use Disorder and healthy control group (N=50) admitted in psychiatry ward and visiting De-addiction OPD at DMC&H and psychological evaluation will be done using the Metacognitive Questionnaire (MCQ-30), Defence Style Questionnaire (DSQ-40) and Moral foundation questionnaire

Clinical Significance: The study will contribute to therapeutic interventions addressing the different errors in metacognition, problematic use of defence styles and malfunctioning in the process of moral decision making and how these problems could be solved.

Keywords: Opioid use disorder, metacognition, defence styles, moral decision making, Drug addicts.

(Signature) Candidate | (Signature) Co-supervisor | (Signature) Co-supervisor | (Signature) Supervisor | (Signature) Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of dissertation **"TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUAL WITH AND WITHOUT OPIOID USE DISORDER"** Exist in the Department of Clinical Psychology, Dayanand Medical College & Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the dissertation are genuine and is collected by the candidate himself/herself under our supervision and guidance.

Supervisor

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Place: LUDHIANA

Date: 21-1-2021

APPROVAL PROFORMA
BY RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	VAISHNAVI DANG
Department	CLINICAL PSYCHOLOGY
Topic of Dissertation	TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUAL WITH AND WITHOUT OPIOID USE DISORDER
Date of enrollment	26.10.2021
Name of Head of Department	Dr. Bholeshwar Prasad Mishra
1) Supervisor **2) Co-Supervisor**	Dr. Bholeshwar Prasad Mishra Dr. Pankaj Kumar Palak Upadhyay
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology)	Mr. R K Sharma (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Ramit Mahajan (Associate Professor, Gastroenterology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / No

Chairperson
Research Committee

Approved: Yes / No

Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	VAISHNAVI DANG , JWALA NAGAR, SAHARANPUR, U.P. (247001)
2	NAME OF THE INSTITUTE	DAYANAND MEDICAL COLLEGE AND HOSPITAL, LUDHIANA
3	COURSE OF STUDY AND SUBJECT	M PHIL CLINICAL PSYCHOLOGY
4	DATE OF ADMISSION OF COURSE	26.10.2020
5	TITLE OF THE TOPIC	TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUALS WITH AND WITHOUT SUBSTANCE USE DISORDER (OPIOID).

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

According to APA, substance use disorder (SUD) is complex a condition in which there is uncontrolled use of a substance despite harmful consequence. People with SUD have an intense focus on using a certain substance(s) such as alcohol, tobacco, or illicit drugs, to the point where the person's ability to function in day to day life becomes impaired. People keep using the substance even when they know it is causing or will cause problems. The most severe SUDs are sometimes called addictions. Opioid dependence is a problem of national concern, especially with dramatically increased rates of abuse and dependence of prescription opioids.[1]

People with a substance use disorder may have distorted thinking and behaviors. Changes in the brain's structure and function are what cause people to have intense cravings, changes in personality, abnormal movements, and other behaviors. Brain imaging studies show changes in the areas of the brain that relate to judgment, decision making, learning, memory, and behavioral control.

According to National Household Survey of Drug Use which is first systematic effort to document the nation-wide prevalence of drug use. Alcohol (21.4%) was the primary substance used (apart from tobacco) followed by cannabis (3.0%) and opioids (0.7%). [2]

According to The Ministry of Social Justice and Empowerment, Government of India, has published a report titled, "Magnitude of Substance Use in India, 2019. Opioid use is reported in 2.1% of the country's population, with heroin use being highest at 1.14% percent followed by pharmaceutical opioids at 0.96% and opium at 0.52%. Regarding the pattern of use, dependent use is highest among users. The prevalence of opioid use in India is three times the global average. In comparison to 2004 the overall use of opioids has become higher and use of heroin has surpassed opium use. Heroin supply and use has a strong link with organized crime, and these findings point to larger politico-economic involvement of other players in this spread. While biological factors are mainly responsible for progression to

dependent use from abuse, we should keep in mind that the use of illicit drugs is also dependent on sociopolitical factors. Variation in prevalence across states also points to this fact. [3]

Opioid use disorders are a major public health concern in Punjab. However, reliable estimates of prevalence of Opioid use disorders are not available for the State. The study conducted by the department of Psychiatry, Government Medical College and Hospital (GMCH), Chandigarh, and coordinated by National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, India reports estimates of prevalence of substance use disorders in Punjab, conducted as part of National Mental Health Survey, India. Overall, in the State of Punjab, an estimated 10, 80, 974 (as of 2016) individuals above 18 year of age were in need of de-addiction services with about 7.5 and 2.3 lakh individuals suffering from alcohol use disorder and other (illicit) substance use disorder, respectively. [4].

Metacognition has recently been researched as a basis for understanding and treating a variety of psychological disorders (Wells, 2000; Wells & Matthews, 1994, 1996). Metacognition refers to cognition applied to cognition and may be defined as “stable knowledge or beliefs about one’s own cognitive system, and knowledge about factors that affect the functioning of the system; the regulation and awareness of the current state of cognition, and appraisal of the significance of thought and memories” (p. 302; Wells, 1995). Metacognition can include beliefs and attitudes about cognitive events such as thoughts, feelings, memories, images, sensations, and perceptions.[4] Wells & Cartwright-Hatton in 2004 prepared a scale (metacognition questionnaire-30) which assess metacognition in five areas : 1) positive beliefs about worry; 2) negative beliefs about the controllability of thoughts and corresponding danger; 3) cognitive confidence; 4) negative beliefs about thoughts in general/need to control thoughts; and 5) cognitive self-consciousness.

Cognitive models of addictions have addressed the role of beliefs and attitudes in substance misuse, but the role of metacognition has been neglected. (Toneatto , 1999)[5]

In psychoanalytic theory, a defense mechanism is an unconscious psychological mechanism that reduces anxiety arising from unacceptable or potentially harmful stimuli [6]. Defense mechanisms are conceptualized as automatic regulatory processes that function to reduce cognitive dissonance and minimize sudden changes in internal and external reality by altering how threatening events are perceived (Vaillant, 1985, 1992b, 1994). Defenses are thought to alter perceptions of the self, others, ideas, and feelings. There is accumulating evidence (Davidson, MacGregor, Johnson, Woody, Chaplin, 2004). It can be defined as ―regulatory processes that allow individuals to reduce cognitive dissonance and to minimize sudden changes in internal and external environments by altering how these events are perceived‖ (Vaillant, 1993). Defense mechanism are patterns and styles of behavior, thinking, and feeling that spring into action in response to perceptions of psychological danger. This response are generally involuntary and are designed to conceal or reduce the psychological conflicts that causes anxiety.[7]

Moral foundations theory has recently emerged from the field of social psychology as a means for understanding cultural, political, and religious differences between individuals and groups. The authors review the moral foundations theory literature to help counsellors in understanding the roots of their clients' and their own moral belief systems and how these systems contribute to decision-making pertaining to morally laden topics. [8]. Moral conceptions of addictions have been considered from both lay and professional viewpoints. The following quotation taken from the Alcoholics Anonymous *Big Book* high lights moral notions of the addictions: “Those who do not recover are people who cannot or will not completely give themselves to this simple program, usually men and women who are constitutionally incapable of being honest with themselves … They are naturally incapable of grasping and developing a manner of living which demands rigorous honesty” (Alcoholics Anonymous, 2001, p. 58).

The Moral Foundations Questionnaire (MFQ) is a self-report measure that was designed to assess the degree to which people prioritize five foundational domains in moral decision-making: Harm/Care, Fairness/Reciprocity, Ingroup/Loyalty, Authority/Respect, and Purity/Sanctity (Graham et al. 2011). These five domains are described in Moral Foundations Theory (MFT), which is grounded in evolutionary theory and supported by ethnographic evidence from around the world (Haidt and Graham 2007) [9].

6.2 REVIEW OF LITERATURE

METACOGNITION AND OPIOID USE DISORDER:

Cumulative evidence indicates that opioid addiction is a chronic disorder with frequent relapses. Longer treatment retention is associated with a greater likelihood of abstinence, whereas incarceration is negatively related to subsequent abstinence. Over the long term, the mortality rate of opioid addicts (overdose being the most common cause) is about 6 to 20 times greater than that of the general population; among those who remain alive, the prevalence of stable abstinence from opioid use is low (less than 30% after 10–30 years of observation), and many continue to use alcohol and other drugs after ceasing to use opioids. Histories of sexual or physical abuse and comorbid mental disorders are associated with the persistence of opioid use, whereas family and social support, as well as employment, facilitates recovery. Maintaining opioid abstinence for at least five years substantially increases the likelihood of future stable abstinence.

Metacognition refers to cognition applied to cognition and may be defined as "stable knowledge or beliefs about one's own cognitive system, and knowledge about factors that affect the functioning of the system; the regulation and awareness of the current state of cognition, and appraisal of the significance of thought and memories" (p. 302; Wells, 1995). [5]

A study was conducted by Tristan Hamonniere, Isabelle Varescon on Metacognitive beliefs in addictive behaviours: A systematic review describing a wide research base has shown the link between metacognitive beliefs and psychopathology and there is currently evidence that elevated levels of maladaptive metacognitive beliefs are present in the majority of psychological disorders. The results were consistent with the metacognitive model of addictive behaviour that supports the central role of metacognitive beliefs in the development and maintenance of addictive behaviours. [10]

A study was carried out by Ali Afshari, University of Maragheh, to compare the defense mechanism among Addicts, at risk of addiction

and healthy subjects, concluded that defense mechanisms is one of the main ingredient in accession or denitrification symptoms of addiction.[11].

In another study by, T Toneatto, on metacognition and substance use. The major metacognitive effects of drugs and alcohol were reduction, detachment from, and intensification of the cognitive event. The major metacognitive consequences of not consuming a substance included beliefs that the cognitive experience would be too uncomfortable, sleep would be disturbed, persistence of the cognitive event, and intensification of the cognitive event. An interaction between metacognitive effects and consequences and the type of cognitive event was found [5].

In another study by Nader Hajloo, et all. On The Role of Meta-cognition in Students' Addiction Potential Tendency it was found that the rate of students' addiction potential tendency can be predicted by having characteristics of their Meta-cognition. It also appeared that among the five parameters of Meta-cognition, the role of three parameters required for controlling thoughts, uncontrollability and risk, and positive beliefs about anxiety were of great importance in predicting addiction potential tendency in students[12].

DEFENCE MECHANISMS AND OPIOID USE DISORDER:

Defence mechanisms are also implemented differently by individuals with SUDs. They are more likely to use neurotic and immature defences such as denial and projection, and display a decrease in mature defences such as humour and rationalisation (Bornstein, Gottdiener, & Winarick, 2010). Defensive styles also impact risk appraisals among individuals with SUDs. Individuals who engage in repressive defensive styles are more likely to believe that they face substantially lower risks when engaging in substance use than others who partake in the same behaviours (Shirachi & Spirrison, 2006). Alcohol dependency itself has also been conceptualised as a dissociative defence that is associated with impairment in emotion regulation and processing (Craparo, Ardino, Gori, & Caretti, 2014).Although literature on the association between SUDs and

defense mechanisms has been mainly focused on a greater use of primitive defense mechanisms among drug addicts (Miller 1985, Ward 1991, Benjamin et al. 1996, Khan et al. 2008, Evren et al. 2012, Halim and Sabri 2013), few studies recently suggested that mature defenses are also implicated in the maintenance of SUDs and the intensity of addiction (Redick et al. 2002, Grebot and Dadard 2010). Furthermore, a new understanding of defense mechanisms as strategies on a continuum from maladaptive to adaptive ones suggests that individuals (both nonclinical and clinical ones) may use a complex mixture of both (Sala et al. 2015).

Considering both mature and immature defenses, the study by Rossella Di Pierro, Ilaria Maria Antonietta Benzi and Fabio Madeddu showed that mature rather than immature ones are primarily involved in SUDs. Specifically, the poor confidence in their own abilities to cope with negative affect states lead individuals to a less use of mature defense mechanisms, which increases the probability to have a SUD diagnosis.[13]

In a study by Tracy A. Prouta, Lindsay E. Gerbera and William H. Gottdienerb trauma symptoms were associated with more frequently self-reported SUD symptoms. As predicted, individuals with trauma symptoms and those with substance use problems also endorsed the use of immature defences such as somatization or acting out. These defences allow an individual to discharge unpleasant thoughts and feelings while also maintaining a lack of awareness of them. Individuals with symptoms of PTSD also employed neurotic defences such as undoing and reaction formation. The implementation of such defences is often automatic; in the absence of such tools, the individual is forced to contend with a greater degree of anxiety and distress. While protective in some respects, immature and neurotic defences are associated with numerous clinical issues and poorer outcomes. Use of immature defences also predicts developing drinking problems later in life, suggesting that poor self-regulatory skills may lead individuals to cope with negative affects through substance abuse (Pitkänen, 1999). Individuals who engage in substance use are more likely to utilise

maladaptive defences and negative religious coping strategies than those without SUDs. Although defensive style and religious coping have patterns of association with trauma and substance use, they do not appear to buffer the well-established relationship between trauma and substance use. [14]

A study by Pranami Barua, Maitrayee Dutta and Ranjan Kumar attempt was made to see the application of defense mechanism and ways of coping between substance abusers and the control group. Result suggested that difference in defense mechanisms & coping styles found between substance abusers and control group. Significant correlation found between several domain of defense mechanism and way of coping. [15]

Raketic, D., Kovacevic, M., & Djuric, T. (2009) tries to define basic similarities and differences in defense mechanisms used by women alcohol and opiate addicts, concluded mostly used neurotic defense mechanisms by alcohol addicts were: pseudoaltruism, idealization, and undoing. The mostly used immature defense mechanisms among opiate addicts were: phantasy, isolation, devaluation, denial and splitting[13] .

In a study conducted by Ali Afshari and Roghayeh Miri on Comparison of Defense Mechanisms in Addicts, at risk and Healthy Subjects . It was concluded that defense mechanisms is one of the main ingredient in accession or densification symptoms of addiction.[16]

Alessandro Taurino, Linda A. Antonucci, Paolo Taurisano & Domenico Laera Investigated defensive functioning and alexithymia in substance use disorder patients. SUD patients presented a more maladaptive/assimilation defensive array. Among SUD sub-groups, Alcohol Use Disorder patients showed more disfuncional defenses. Factor 1 defenses were related to a worse psychological functioning. In addition, alexyhimia (particularly DIF) was strongly related to Factor 1 defenses, expecially Projection.[17]

Katarzyna Iwanicka, Aneta Gerhant, Marcin Olajossy researched about Psychopathological symptoms, defense mechanisms and time perspectives among subjects with alcohol dependence (AD) presenting

different patterns of coping with stress. Significant differences on the DSQ 40 scales were identified between cluster I and cluster III. Individuals in the emotional-avoidant cluster (I) achieved significantly higher scores than those in the task-oriented cluster (III) in relation to the intensity of their use of immature defense mechanisms such as projection (p = .01), passive aggression (p = .02), displacement (p = .01) and splitting (p = .01). At the same time, individuals in clusters I and III used a mature mechanism, i.e., sublimation (p = .03), significantly more frequently than those in cluster II. Participants in the mixed coping cluster (II) are the least likely, however, to use a defense mechanism such as passive aggression (p = .04), compared to the individuals in the other two clusters.[18]

The defense styles were assessed in alcohol-dependent patients to verify whether they used less adaptive defense mechanisms compared with healthy controls and to evaluate if immature defense styles (IDSs), concluded that alcohol dependents are using maladaptive IDS more, which can be taken into account in the development of therapeutic programs for these patients[19].

MORAL DECISION MAKING AND OPIOID USE DISORDER:

Martina Carmona-Perer conducted a study on Moral decision-making in polysubstance dependent individuals and it was concluded that in Polysubstance dependent individuals endorsed more utilitarian choices for personal dilemmas (e.g., smothering a baby to save a group of hidden people during wartime). These choices were also perceived as less difficult. Severity of alcohol use correlated with the proportion of utilitarian judgments. [16]

The study conducted by Nicole Lynn Henderson et all. examines the cognitive resources underlying the attribution of stigma in substance use and misuse and incorporate general beliefs about moral decision-making, assessed through Moral Foundations Theory. Study found an interaction between the purity moral foundation and the cultural model of risk. [20]

A study by Farhana Sajjad Kiani1, Sadaf Ahsan, Qurat Ul Ain, Saadiya Abbasi, Faisal Khalil-Ur-Rehman assisted in explaining that the moral

development of individuals with CUD is lower than non-users. The research findings indicated the need to deal with issues of moral development of individuals with CUD. It is further concluded that individuals with mild, moderate, and severe CUD significantly differ in their moral development. The research contributed to the understanding of the difference in moral development among individuals having CUD. The result of the study suggests the need to deal with the issues of moral development in individuals suffering from CUD. [21]

Olena Antonaccio and Charles R. Tittle wrote a paper that offers evidence to specify further Self-Control Theory by investigating its predictive strength relative to morality and its interconnections with morality in accounting for criminal probability. Morality is shown to be a strong independent predictor with strength that seems to exceed substantially that of self-control. In addition, taking morality into account significantly reduces the coefficients for self-control, sometimes eliminating them entirely, and morality shows little interaction with self-control in its predictions of the measures of criminal probability. The results suggest that the recently formulated Situational Action Theory, which features (weak) morality as the prime cause of criminal behavior and questions the relative importance of self-control, should be taken seriously. Overall, the results confirm the importance of self-control as a factor in misbehavior; yet, they also provide a mandate for greater attention to morality as a potent variable in understanding misconduct.[22]

The study by Collette, Tessa, Pakzad, Sarah, Bergheul and Said focuses on exploring the relationships between various patterns of criminal acts committed, drug use, alcohol consumption, and adult personality traits in a sample with a low probability of life course persistent criminal behaviors. The results of a MANOVA and discriminant analysis support the likelihood of groupings based on criminal acts committed being significantly influenced by drug use and alcohol use. [23]

6.3 AIMS AND OBJECTIVES OF THE STUDY

1. To evaluate metacognition in patients with a diagnosis of opioid use disorder.
2. To evaluate type of defense styles used by patients with a diagnosis of opioid use disorder.
3. To evaluate moral decision making in patients with a diagnosis of opioid use disorder
4. To find the relationship among metacognition, defense style and moral decision making in patients with a diagnosis of opioid use disorder.
5. To compare metacognition, defense style and moral decision making in patients with a diagnosis of opioid use disorder

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

Study will be conducted on 50 opioid use disorder and 50 healthy individuals as control group, admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College and Hospital.

7.2 METHOD OF COLLECTION OF DATA

DESIGN: cross sectional study.

SAMPLE SIZE: 50 patients diagnosed with Opioid use disorder and 50 healthy control.

SAMPLE DESIGN: Purposive sampling design will be used. The respondents who meet the inclusion criteria will be selected for the study.

SAMPLE COLLECTION- The study will be conducted on of 50 patients with opioid use disorder and 50 healthy individuals as control group from 18 to 65 years of age , admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College and Hospital.

INCLUSION CRITERIA (experimental group)

- Patients having a diagnosis of opioid use disorder according to ICD 11.
- Gender: male
- Age group between 18 to 65 years.
- Patients having opioid use disorder, admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College and Hospital.
- Patients willing to give informed consent.

EXCLUSION CRITERIA (experimental group)

- Patients with opioid use disorder or any psychiatric comorbidity.
- History of intellectual disability.
- Major neurological disorder and communication disorder.
- Patients not willing to give informed consent.

INCLUSION CRITERIA (control group)

- Healthy control group not having any psychiatric illness.
- Gender: male
- Individuals not having the diagnosis of any SUD.
- Age group between 18 to 65 years.
- Patients willing to give informed consent.

EXCLUSION CRITERIA (control group)

- Patients with any psychotic illness, developmental disability and intellectual disability.
- Patients not willing to give informed consent.

DESCRIPTION OF THE TOOLS:

1. **The Metacognitive Questionnaire (MCQ-30):** comprises five subscales:- positive beliefs about worry; negative beliefs about thoughts of danger and uncontrollability; the need to control thoughts; cognitive confidence regarding attention and memory; and cognitive self-consciousness (attending to thought processes), (Wells & Cartwright-Hatton, 2004). Respondents complete the questionnaire by rating the extent to which they agree with the 30 items on a four-point scale. Alpha scores for four of the subscales ranged from 0.91 to 0.93, and the, need to control thoughts‟ subscale yielded an alpha score of 0.72, (Wells & Cartwright-Hatton, 2004). The construct validity of the scale was examined using exploratory factor analysis; the authors concluded that the five factor structure was a good fit for the measure, and that factor composition replicated that of the full version of the MCQ, (Wells & Cartwright-Hatton, 2004).[19]
2. **Defense Style Questionnaire (DSQ-40):** Andrews and colleagues (1993) created a 40 item version from the 82 and 88 item scales. In comparison to prior versions of the DSQ, the development of the 40 item appears more rigorous. DSQ-40 can yield 20 different defense styles and they are divided into three sub categories: Immature (12): projection, passive aggression, acting out, devaluation, autistic

fantasy, isolation, splitting, somatization, denial, displacement, dissociation, rationalization Neurotic (4): undoing, pseudoaltruism, idealization, reaction formation Mature (4): sublimation, humor, anticipation, suppression. Test-retest reliability 0.66 over 4 weeks and Coefficient alpha: 0.68 mature, 0.58 neurotic, 0.80 immature.[20]

3. **Moral foundation questionnaire**: The Moral Foundations Questionnaire (MFQ) is 20 item, 6 point scale, self-report measure that was designed to assess the degree to which people prioritize five foundational domains in moral decision-making: Harm/Care, Fairness/Reciprocity, Ingroup/Loyalty, Authority/Respect, and Purity/Sanctity (Graham et al. 2011). These five domains are described in Moral Foundations Theory (MFT). Cronbach's alphas is 0.65- 0.84 and test-retest reliabilities (Pearson correlations), approximately one month between t1 and t2, was 0.69- 0.82. [21]

METHODOLOGY

The study will be conducted on 50 patients of opioid use disorder and 50 individuals without SUD (control group) from 18 to 35 years of age, admitted in psychiatry ward and visiting De-addiction OPD at Dayanand Medical College, Ludhiana and 50 individuals without substance use use disorder (opioid) from 18 to 35years of age. Socio Demographic Proforma will be filled containing the basic information of the subject and they will be evaluated for metacognition using metacognition questionnaire -30, defense style using defense style questionnaire-40 and moral decision making using Moral Foundation Questionnaire.

OUTCOME

The study expects a difference in metacognition, defense style and moral decision making between individuals with substance use disorder (opioid) and healthy control group. This study expects to find an association among metacognition, defense style and moral decision making in patients with substance use disorder (opioid). In this study the causation among the factors would also be studied. There are very few studies on moral decision making pattern in substance use disorder patients. This study will give an overall picture of mental

processing of patients with substance use disorder: how they think about their thinking, how they unconsciously use thoughts to reduce anxiety arises due to excessive intake of substance (opioid) and also intend to explain the origins of and variation in moral reasoning on the basis of innate, modular foundations. This study will contribute in therapeutic management of patients with substance use disorder.

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups will be done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square ($\chi 2$) test will be performed and exact test was used when the expected frequency is less than 5. A probability value (p value)less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

NO

7.4 HAS ETHICAL CLEARENCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes

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SOCIO-DEMOGRAPHIC PROFORMA

S.NO: - **Date:**

1. NAME:

2. AGE:

3. SEX: - Male/ Female

4. MRD.NO: -

5. Education-

a) Illiterate b) Up to Matric
c) 10th d) 12th e) Graduate f) Post graduate

6. Occupation-

a) Farmer/Clerical/Shopkeeper b) Semi-skilled/skilled worker
c) Unemployed d) Other
e) Professional f) Student

7. Address- a) Urban b) Rural

8. Contact no.-

9. Family Type- a) Nuclear b) Joint

10. Education of the Head of family

Professional degree
Graduate or post graduate
Intermediate or post high school diploma
High school certificate
Middle school certificate
Primary school certificate
Illiterate

11. Occupation of the head of family

Professional
Semi- professional
Clerical, shop owner/farm
Semi skilled worker
Unskilled worker
Unemployed

Signature of Candidate Signature of Supervisor

12. Monthly income of the family

>52,734
26,335-52,733
19,759-26,354
13,161- 19,758
7,887-13,160
2,641-7,886
<2,640

13. Socio economic status

Upper
Upper middle
Lower middle
Upper lower
Lower

14. Diagnosis:

15. SCALES:

A. METACOGNITIONS QUESTIONNAIRE:

A.1 - Cognitive confidence :

A.2- Positive beliefs about worry :

A.3- Cognitive self-consciousness:

A.4- Uncontrollability and danger:

A.5- Need to control thoughts

B. . Defense Style Questionnaire (DSQ 40)

Suppression	Sublimation	Humor	Anticipation
Pseudo-altruism	Idealization	Reaction formation	Projection
Passive aggression	acting out	isolation	devaluation
autistic fantasy	Denial	Displacement	Dissociation
Splitting	Rationalization	Somatization	Undoing

C. MORAL FOUNDATION QUESTIONNAIRE

C.1 Harm
C.2 Fairness
C.3 In-group:
C.4 Authority:
C.5 Purity

CONTACT NO.

Signature of Candidate Signature of Supervisor

Moral Foundations Questionnaire

Part 1. When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? Please rate each statement using this scale:

[0] = not at all relevant (This consideration has nothing to do with my judgments of right and wrong)

[1] = not very relevant

[2] = slightly relevant

[3] = somewhat relevant

[4] = very relevant

[5] = extremely relevant (This is one of the most important factors when I judge right and wrong)

_____Whether or not someone suffered emotionally.

_____Whether or not some people were treated differently than others.

_____Whether or not someone's action showed love for his or her country.

_____Whether or not someone showed a lack of respect for authority.

_____Whether or not someone violated standards of purity and decency.

_____Whether or not someone was good at math.

_____Whether or not someone cared for someone weak or vulnerable.

_____Whether or not someone acted unfairly.

_____Whether or not someone did something to betray his or her group.

_____Whether or not someone conformed to the traditions of society .

_____Whether or not someone did something disgusting.

_____Whether or not someone was cruel.

_____Whether or not someone was denied his or her rights.

_____Whether or not someone showed a lack of loyalty

_____Whether or not an action caused chaos or disorder

_____Whether or not someone acted in a way that God would approve of

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Part 2. Please read the following sentences and indicate your agreement or disagreement:

[0]	[1]	[2]	[3]	[4]	[5]
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

_____Compassion for those who are suffering is the most crucial virtue.

_____When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.

_____I am proud of my country's history.

_____Respect for authority is something all children need to learn.

_____People should not do things that are disgusting, even if no one is harmed.

_____It is better to do good than to do bad.

_____One of the worst things a person could do is hurt a defenseless animal.

_____Justice is the most important requirement for a society.

_____People should be loyal to their family members, even when they have done something wrong.

_____Men and women each have different roles to play in society.

_____I would call some acts wrong on the grounds that they are unnatural.

_____ It can never be right to kill a human being.

_____ I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing.

_____ It is more important to be a team player than to express oneself.

_____ If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty.

_____ Chastity is an important and valuable virtue.

Signature of Candidate Signature of Supervisor

INFORMED PATIENT CONSENT

Date: _____

I……..D/o, W/o, S/o…… ……am willing to participate in the study "**TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUALS WITH AND WITHOUT OPIOID USE DISORDER**" The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of dissertation is being carried out. I am free to opt out the study any time without assigning any reason.

…… ……

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

<u>मरीज अनुमति फार्म</u>

तिथि_____

मैं_____ पत्नी/पुत्र/ पुत्री_____

निवासी_____

इस शोधकार्य "**TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUALS WITH AND WITHOUT OPIOID USE DISORDER**"में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं श्य न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्दे दिया गया और स है की यह विज्ञान और कर दिया गया है और मुझे यह विश्वास्पष्ट मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी मैं इस कर सकताअस्वीकृति व्यक्त/ करने का सकती हूँ और मेरे अस्वीकृति व्यक्त मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/ अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक केहस्ताक्षर

_____

के हस्ताक्षर विद्यार्थी

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ_____ _____

“TO STUDY METACOGNITION, DEFENSE STYLES AND MORAL DECISION MAKING IN INDIVIDUALS WITH AND WITHOUT OPIOID USE DISORDER” ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ ।ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ ।ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ _____ਮਿਤੀ

ਪਤਾ _____ ਪਤਾ_____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ